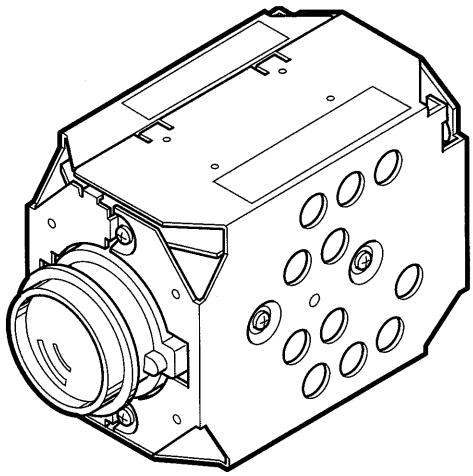
HITACHI

SERVICE MANUAL

TK | No.8907E

VK-S234/S234E
VK-K234/K234E



SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

COLOR & B/W VIDEO CAMERA

August 1999 Digital Media Products Division,Tokai

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts have special safety-related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for a higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual. Electrical components having such features are identified by marking with a ⚠ on the schematics and the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards. Product safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies for, HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.

How to discriminate the "TYPE" identifications in the manual

The parts and circuits are identified by "TYPE" in this manual to discriminate the differences between models. The TYPE numbers are the same as the model numbers. The table below shows how to read the type identifications.

TYPE identification	Model name
TYPE S2	VK-S234
TYPE S2E	VK-S234E
TYPE K2	VK-K234
TYPE K2E	VK-K234E
TYPE S9	Not used
TYPE S9E	Not used
TYPE K9	Not used
TYPE K9E	Not used

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CHAPTER 1 GENERAL INFORMATION

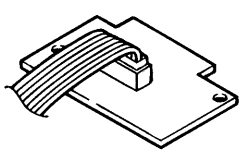
SPECIFICATIONS

Note: The specifications are subject to change for improvement without notice.

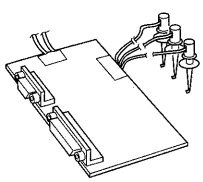
Signal:	VK-S234:	NTSC Format
	VK-K234:	EIA Format
	VK-S234E:	PAL Format
	VK-K234E:	CCIR Format
Scanning System:	2:1 Interlaced	
Image Sensor:	1/4" CCD Image Sensor	
Number of Effective Pixels:	VK-S234/K234:	768(H) × 494(V)
	VK-S234E/K234E:	752(H) × 582(V)
Total Number of Pixels:	VK-S234/K234:	811(H) × 508(V)
	VK-S234E/K234E:	795(H) × 596(V)
Scanning Frequency:	VK-S234/K234:	Horizontal 15.734kHz / Vertical 59.94Hz
	VK-S234E/K234E:	Horizontal 15.625kHz / Vertical 50Hz
Video Signal Output:	VK-S234/S234E:	Composite Signal 1.0Vp-p
	VK-K234/K234E:	Y (Luminance) Signal 1.0Vp-p
Minimum Required Illumination:	VK-S234/S234E:	3.0 lx (Standard) / 0.2 lx (Slow shutter)
	VK-K234/K234E:	0.2 lx (Standard) / 0.02 lx (Slow shutter)
S/N Ratio:	50 dB or more	
Horizontal Resolution:	VK-S234:	470 TV Line or more
	VK-S234E:	460 TV Line or more
	VK-K234/K234E:	500 TV Line or more
Permissible Operating Temperature:	0 - 60 °C	
Permissible Operating Humidity:	10 - 90 %	
Power Input:	DC 9 V ± 0.5V	
Power Consumption:	3.3 W or less	
Dimensions:	50(W) × 60(H) × 89.5(D) mm	
Weight:	Approx. 225 g	

JIGS FOR ADJUSTMENT

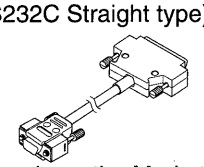
1. DSP Interface Connect Jig
No. 7069179



2. DSP-R Jig
No. 7099448

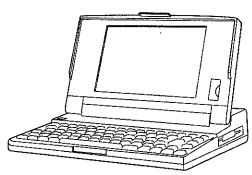


3. Personal Computer
Cable 9-PIN or 25-PIN
(RS232C Straight type)



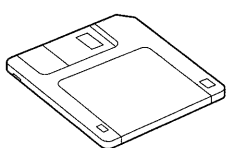
[Goods on the Market]

4. Personal Computer



[Goods on the Market]

5. Adjustment Floppy Disk
(3.5inch) No. TP12001



[New Jig]

COMPARISON OF FEATURES

ITEM	VK-S914/K914/S914E/K914E	VK-S234/K234/S234E/K234E
Signal Format	VK-S914: NTSC VK-K914: EIA VK-S914E: PAL VK-K914E: CCIR	VK-S234: NTSC VK-K234: EIA VK-S234E: PAL VK-K234E: CCIR
Power Requirements	DC 9V	
Power Consumption	3.2W (MAX)	3.3W (MAX)
Dimensions (W x H x D mm)	50 x 60 x 86	50 x 60 x 89.5
Weight	Approx. 235g	Approx. 225g
Lens	Power Zoom [x16 (4.0 - 64.0mm)/F1.4]	Power zoom [x22 (4.0 - 88.0mm)/F1.6]
Permissible Operating Temperature/Humidity	0°C to 60°C (Recommendation: 0°C to 40°C) 10% to 85%	0°C to 60°C (Recommendation: 0°C to 40°C) 10% to 90%
Image Sensor	VK-S914/S914E: Color 1/4" CCD VK-K914/K914E: B/W 1/4" CCD	VK-S234/S234E: Color 1/4" CCD VK-K234/K234E: B/W 1/4" CCD
Number of Effective Pixels	VK-S914/K914: 768 (H) x 494 (V) VK-S914E/K914E: 752 (H) x 582 (V)	VK-S234/K234: 768 (H) x 494 (V) VK-S234E/K234E: 752 (H) x 582 (V)
Total Number of Pixels	VK-S914/K914: 811 (H) x 508 (V) VK-S914E/K914E: 795 (H) x 596 (V)	VK-S234/K234: 811 (H) x 508 (V) VK-S234E/K234E: 795 (H) x 596 (V)
Scanning System	2:1 Interlaced	
Horizontal Scanning Frequency	VK-S914/K914: 15.734 kHz VK-S914E/K914E: 15.625kHz	VK-S234/K234: 15.734 kHz VK-S234E/K234E: 15.625kHz
Vertical Scanning Frequency	VK-S914/K914: 59.94 Hz VK-S914E/K914E: 50Hz	VK-S234/K234: 59.94 Hz VK-S234E/K234E: 50Hz
Sync Format	Internal/External	
Video Signal Output	VK-S914/S914E: Composite Signal 1.0Vp-p VK-K914/K914E: Y (Luminance) Signal 1.0Vp-p	VK-S234/S234E: Composite Signal 1.0Vp-p VK-K234/K234E: Y (Luminance) Signal 1.0Vp-p
S/N Ratio	46 dB or more	
Horizontal Resolution	VK-S914/S914E: 450 TV Line or more VK-K914/K914E: 500 TV Line or more	VK-S234: 470 TV Line or more VK-S234E: 460 TV Line or more VK-K234/K234E: 500 TV Line or more
Minimum Required Illumination	VK-S914/S914E: 3.0 lx VK-K914/K914E: 0.1 lx	VK-S234/S234E: 3.0 lx (Standard) VK-K234/K234E: 0.2 lx (Standard)

COMPARISON OF MAIN CONTROL ICs

ITEM	VK-S914/K914/S914E/K914E	VK-S234/K234/S234E/K234E
CCD Image Sensor	VK-S914: ICX208AK-6 (IC1001) VK-S914E: ICX209AK-6 (IC1001) VK-K914: ICX208AL-6 (IC1001) VK-K914E: ICX209AL-6 (IC1001)	VK-S234: ICX208AK-6 (IC1001) VK-S234E: ICX209AK-6 (IC1001) VK-K234: ICX208AL-6 (IC1001) VK-K234E: ICX209AL-6 (IC1001)
CDS AGC & A/D CONV.	HD49322BF (IC1102)	HD49323AF (IC1101)
Digital Process (DSP)	HG73C012TE (IC1103)	HG73C053FE (IC1121)
Drive Pulse Gen.	µPD16510GR (IC1934)	µPD16510GR (IC1002)
Digital µP	HD6433042ST37F or HD6433042ST42F (IC1106)	HD6432237M (IC1201)
EEP-ROM	S-29394AFJA (IC1107)	X25097V1-2.7 (IC1202)
Reset Pulse Gen.	RN5VT28AA (IC1108)	RN5VT28AA (IC1203)
D-RAM	Not provided	MSM51V18165BSL-6TS-K (IC1122)
Level Shift	HD74HCT125T (IC1109)	HD74HCT125T (IC1602)
Inv.	TC7SU04F (IC1116)	TC7SU04F (IC1174)
Inv.	TC7SU04F (IC1113)	TC7SU04F (IC1173)
FV Pulse Gen.	IDC-7S08 (IC1114)	IDC-7S08 (IC1604)
VCO/Phase Compa.	TC5081AP (IC1581)	74VHC4046MTCX (IC1603)
Inv.	TC7SU04F (IC1112)	Not provided
Y/C Mix./Video Amp	MM1029AT (IC1117)	BA7664FV (IC1601)
F.Det./Iris Drive	µPC5023GS-147GJG (IC1201)	µPC5023GS-147GJG (IC1351)
Zoom Motor Drive	MPC17AT85VM (IC1301)	
Focus Motor Drive	MPC17AT85VM (IC1302)	
Camera PWM	TL1464IPT (IC1501)	
FV Switch	74HC00 (IC1115)	Not provided

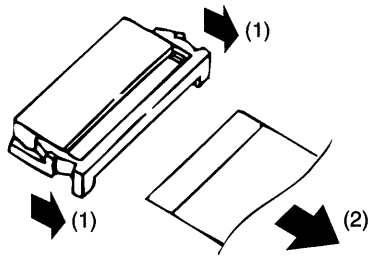
CHAPTER 2 DISASSEMBLY

1. DISASSEMBLY PROCEDURE

The numbers in the followinng tables correspond to those in Fig. 2-2.
Remove each component shown in the following tables according to the order of the numbers.

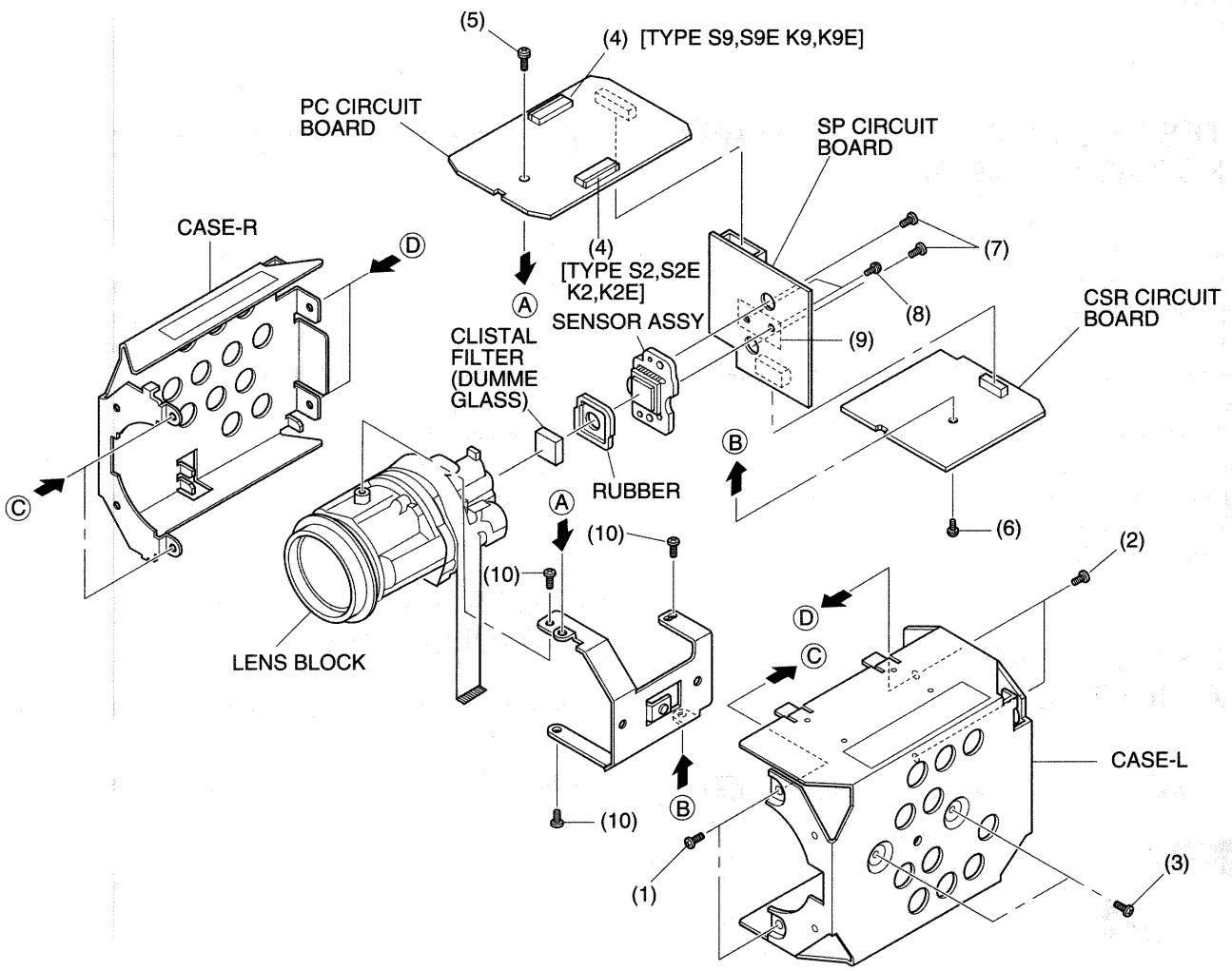
Item	CASE-R	CASE -L	PC Circuit Board	CSR Circuit Board	SP Circuit Board & CCD Sensor	Lens Block	How to remove
Removal Procedure and Number of Component to be removed	(1) ↓ (2)	(1) ↓ (2) ↓ (3)	(1) ↓ (2) ↓ (3) ↓ (4) ↓ (5)	(1) ↓ (2) ↓ (3) ↓ (6)	(1) ↓ (2) ↓ (3) ↓ (4) ↓ (5) ↓ (6) ↓ (7) ↓ (8) ↓ (9)	(1) ↓ (2) ↓ (3) ↓ (4) ↓ (5) ↓ (6) ↓ (7) ↓ (10)	(1) Remove 2 screws. (2) Remove 2 screws. (3) Remove 2 screws. (4) Disconnect the flat cable. (Note 1) (5) Remove 1 screw and remove the PC circuit board. (6) Remove 1 screw. (7) Remove 2 screws. (8) Remove 2 screws. (9) Unsolder 14 points. (Note 2) (10) Remove 3 screws.

Notes: 1. Do not the pull out the flat cable or touch the exposed terminal at the connecting position with your bare hands as it could cause a defective (1) and (2) shown in Fig. 2-1.
2. When the SP circuit board is removed, the crystal filter (or dummy grass) and rubber are also removed. Be careful not to damege and lose them.



(1) Release the lock of the connector on the left and right.
(2) Pull out the flat cable

Fig. 2-1


(5)
(4) [TYPE S9,S9E K9,K9E]
PC CIRCUIT BOARD
SP CIRCUIT BOARD
CASE-R
(4) [TYPE S2,S2E K2,K2E]
(7)
(8)
CSR CIRCUIT BOARD
SENSOR ASSY
(9)
CLISTAL FILTER (DUMME GLASS)
RUBBER
(6)
(10)
(10)
(2)
LENS BLOCK
CASE-L
(10)
(1)
(3)

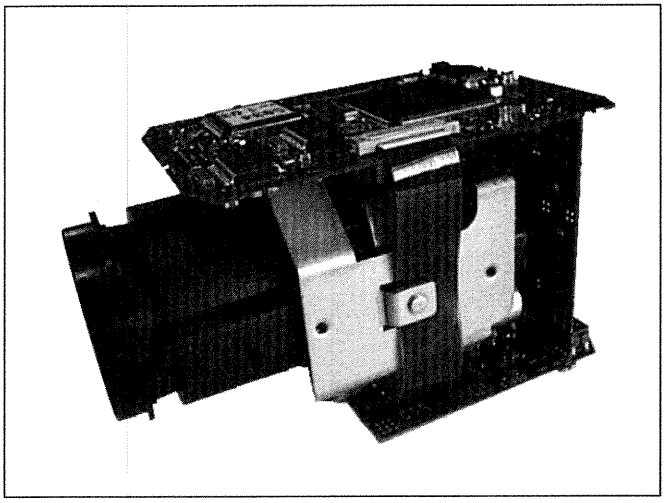


Fig. 2-2

CHAPTER 3 ELECTRIC CIRCUIT ADJUSTMENT

Trademark

MS-DOS is a registered trademark of Microsoft Corporation.

Abbreviation

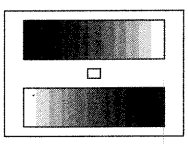
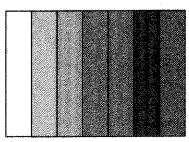
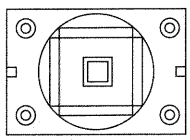
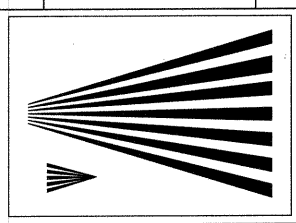
SMAP: Digital adjustment program for the camera.
DSP: Digital signal processor

1. TEST EQUIPMENT NECESSARY FOR ADJUSTMENT

Oscilloscope (dual trace) [& Vectorscope]
Digital Voltmeter (DVM)
Color Video Monitor
Adjustment Floppy Disk
Personal Computer
Personal Computer 9-pin or 25-pin (RS232C) Cable
DSP-R Jig
DSP Interface Connect Jig
Light Box (3100°K)
Light Balancing Filter C12
DC Power Supply (DC9V/3A)
DC Power Supply (DC5V/1A)

2. LIST OF CHARTS FOR ADJUSTMENT

Table 3-1

Gray Scale Chart	Color Bar Chart	Resolution Chart
		
Backfocus Adjustmant Chart		

3. ADJUSTMENT CONDITION

1. Use a light box with minimum flickering.
2. When using the video out to perform adjustment, be sure to terminate the video out with 75 ohms.
3. Place the light box approx. 30cm away from the camera (lens surface) when otherwise not specified.
4. Point the camera at the chart to full the video period when otherwise not specified.
5. Use the 10:1 probe of the oscilloscope when otherwise not specified.
6. When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10μs/div.

4. CONNECTION FOR ADJUSTMENT

Connect the camera, personal computer, jigs, etc. as shown Fig. 3-1.

Notes: 1. Perform the adjustment using a personal computer.

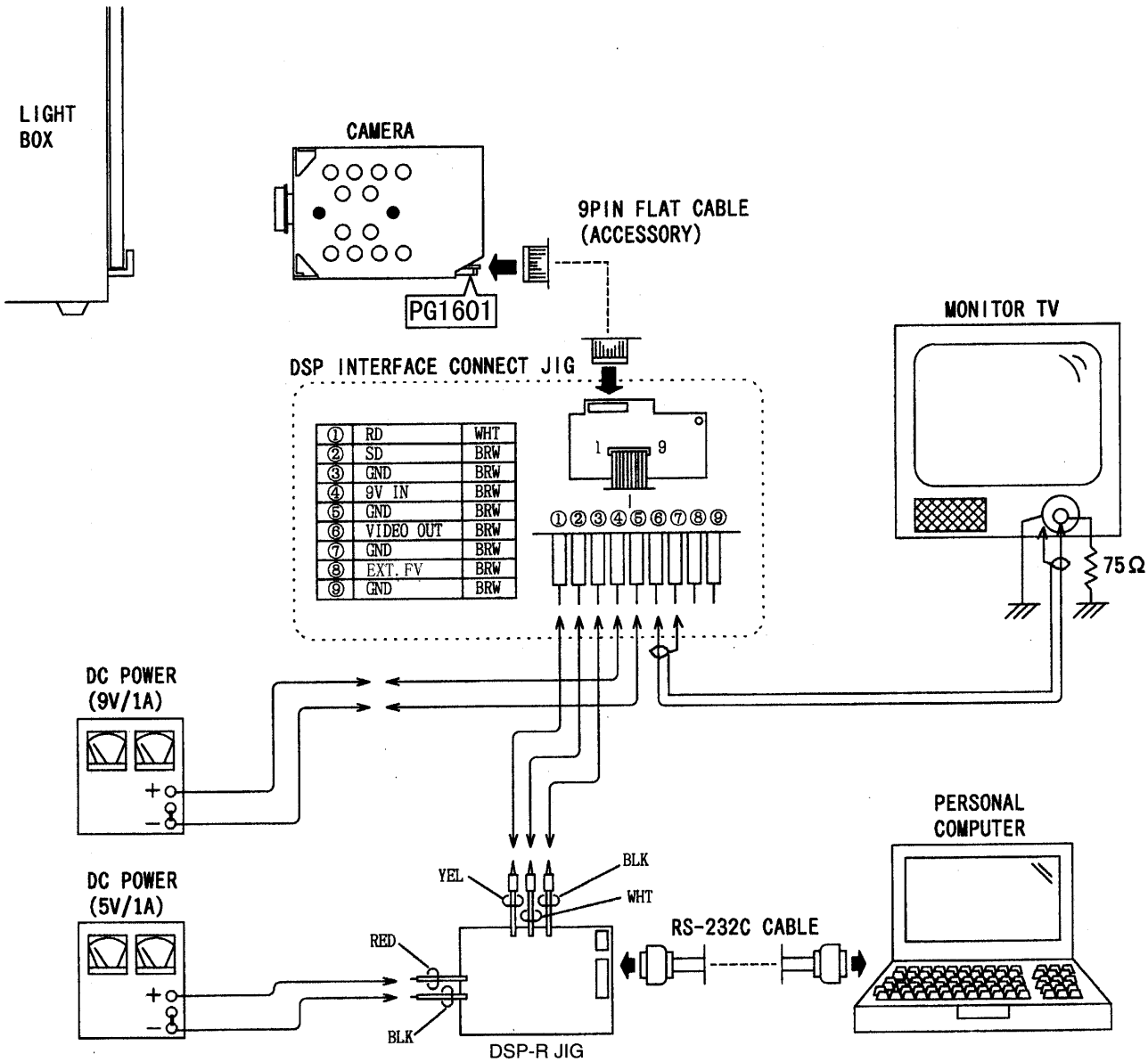

LIGHT
BOX
CAMERA
PG1601
9PIN FLAT CABLE
(ACCESSORY)
DSP INTERFACE CONNECT JIG
① RD WHT
② SD BRW
③ GND BRW
④ 9V IN BRW
⑤ GND BRW
⑥ VIDEO OUT BRW
⑦ GND BRW
⑧ EXT. FV BRW
⑨ GND BRW
1
9
①②③④⑤⑥⑦⑧⑨
MONITOR TV
75Ω
DC POWER
(9V/1A)
DC POWER
(5V/1A)
YEL
BLK
WHT
RED
BLK
DSP-R JIG
RS-232C CABLE
PERSONAL
COMPUTER

Fig. 3-1

5. CHECK AFTER REPLACING MAJOR COMPONENTS

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are replaced.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Caution: When EEP ROM or the PC circuit board is replaced, initialize the EEP ROM, referring to "6.3 Initial Setting by Model" then perform the all adjustments.

Table 3-2

■ For TYPE S9, S9E, S2, S2E

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS									
		SP Circuit Board	PC Circuit Board	IC1001	IC1121	IC1201	IC1202	IC1351	Lens Block		
INITIAL SETTING BY MODEL			●				●				
ELECTRIC VOLUME ADJUSTMENT PROCEDURE											
(1)	CDS Smpling Pulse Adjustment		●		●		●				
DIGITAL ADJUSTMENT PROCEDURE											
(1)	Auto Iris Control Adjustment	●	●	●		●	●	●	●		
(2)	Matrix Adjustment	●	●	●			●				
(3)	White Balance Adjustment	●	●	●			●				
(4)	Chroma Gain Adjustment	●	●	●			●				
AUTOFOCUS ADJUSTMENT PROCEDURE											
(1)	Zoom Trace Adjustment	●	●	●			●		●		
(2)	AF Noise Level Adjustment	●	●	●			●		●		
SPOT NOISE ADJUSTMENT PROCEDURE		●	●	●			●				

Table 3-3

■ For TYPE K9, K9E, K2, K2E

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS									
		SP Circuit Board	PC Circuit Board	IC1001	IC1121	IC1201	IC1202	IC1351	Lens Block		
INITIAL SETTING BY MODEL			●				●				
ELECTRIC VOLUME ADJUSTMENT PROCEDURE											
(1)	CDS Smpling Pulse Adjustment		●		●		●				
DIGITAL ADJUSTMENT PROCEDURE											
(1)	Auto Iris Control Adjustment	●	●	●		●	●	●	●		
AUTOFOCUS ADJUSTMENT PROCEDURE											
(1)	Zoom Trace Adjustment	●	●	●			●		●		
(2)	AF Noise Level Adjustment	●	●	●			●		●		
SPOT NOISE ADJUSTMENT PROCEDURE		●	●	●			●				

6. ADJUSTMENT PROCEDURE

Notes: 1. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera and jig.
2. The following describes an example of the instructions of the personal computer and the menu display; they are different depending on the personal computer manufacturer and model. Refer to the instruction manual of personal computer.
3. When the error message appears during adjustment, refer to "7. Error Message". If a key is pressed after an error message appears, the ADJUSTMENT MENU is restored.

6.1 Connections for Adjustment

Connect the camera, DSP-R jig, personal computer, power supply, etc. as shown in Fig. 3-1.
Check that the camera is turned on.

6.2 How to Start the MAP

(1) Turn the personal computer on and start the MS-DOS system.

Note: Refer to the instruction manual of the personal computer for how to start computer.

(2) Load the adjustment floppy disk in to disk drive A and press **A:** [ENTER]

```
C>A:
A>
```

(3) Press **SMAP_IBM** [SPACE] **1** [ENTER].

Note: When you use a personal computer with two serial interface connectors and connect the DSP jig to serial interface connector 2, press SMAP_IBM 2.

```
C>
A>SMAP_IBM 1
```

```
Manual adjustment program for service station
Copyright (C) Hitachi LTD
```

```
**************************************************
                MODEL SELECT
**************************************************
              [1]    xxxxxxx
              [2]    xxxxxxx
              [3]    xxxxxxx
              [4]    xxxxxxx
              [5]    xxxxxxx
              [P]    NEXT SELECTION
              [ESC]  END
        PLEASE SELECT THE TYPE OF THE SET.
          PRESS [1] - [5] OR [P] OR [ESC]
```

(4) Select the number accodding to the model.
If [ESC] (escape) is pressed, the display before the SMAP starts (MS-DOS) is restored.

Notes: 1. If the required model is not found, press the **P** key and select the model from the next screen.
2. If you specify the wrong model, press [ESC] (escape) to restore the MODEL SELECT display, then specify the correct model.
3. If you select number without a model name by mistake, the message shown in "MESSAGE WHEN OPERATED BY MISTAKE" will appear in the computer's display. Press any key to return the display to MODEL SELECT dispaly.

MESSAGE WHEN OPERATED BY MISTAKE

```
CAN NOT FIND THE DATA FILE
**** PRESS ANY KEY ****
```

```
SELECTED MODEL IS x x x x x x x
ARE YOU SURE ? (Y/N)
```

(5) Press **Y** key.
If **N** key is pressed, the computer's display returns to MODEL SELECT display.

MAIN MENU

```
**************************************************
          MANUAL ADJUSTMENT PROGRAM
**************************************************
          [A]    DATA INITIALIZE
          [B]    ELECTRIC VOLUME
          [C]    ADJUSTMENT
          [D]    AUTO FOCUS
          [E]    SPOT NOISE
          [ESC]  END
     PLEASE SELECT [A] - [E] OR [ESC]
```

6.3 Initial Setting by Model

Before Starting Initial Setting

1. This item describes how to initialize the EEP ROM. Be sure to perform this item after replacing EEP ROM or the PC circuit board.
   When other components are replaced, normally, it is not necessary to initialize the EEP ROM.
   Press [ESC] (escape) to return the computer's display to MAIN MENU.
2. Be sure to perform the following adjustments after completing the initial setting.
   - 6.4 Electric Volume Adjustment Procedure
   - 6.5 Digital Adjustment Procedure
   - 6.6 Autofocus Adjustment Procedure
   - 6.7 Spot Noise Adjustment Procedure

(1) Start the SMAP.

MAIN MENU

```
**************************************************
        MANUAL ADJUSTMENT PROGRAM
**************************************************
          [A]      DATA INITIALIZE
                     :
                     :
        PLEASE SELECT [A] - [E] OR [ESC]
```

(2) Press **A** key.

```
        « DATA WRITING »
    START TO SEND DATA.   (Y/N)
```

(3) Press **Y** key to start.
Press **N** to return to MAIN MENU display.

(4) Perform adjustment according to the computer display hereafter.
See "7. Error Messages" if an error message appears on the computer display.

6.4 Electric Volume Adjustment Procedure

Before Starting Adjstment

When EEP ROM or the PC circuit board is replaced, initialize the EEP ROM, referring to "6.3 Initial Setting By Model" then perform all the electric volume adjustments.

(1) Start the SMAP.

MAIN MENU

```
**************************************************
        MANUAL ADJUSTMENT PROGRAM
**************************************************
                     :
          [B]      ELECTRIC VOLUME
                     :
        PLEASE SELECT [A] - [E] OR [ESC]
```

(2) Press **B** key.

ELECTRIC VOLUME ADJ. MENU

```
**************************************************
        ELECTRIC VOLUME
**************************************************
          [1]      CDS SAMPLING PULSE
          [ESC]    RETURN TO MAIN MENU
          PLEASE SELECT [1] OR [ESC]
```

Note: 1. If [ESC] (escape) is pressed, the computer's display returns to MAIN MENU display.
2. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera and jig.

(1) CDS Sampling Pulse Adjustment

Purpose:

To suppress noise in the CCD sensor output signal and maximize the signal level.

Incompleted Phenomenon:

Diagonal beats and horizontal noise occur.

Condition:

Leave the camera for more than 2 minutes untill the circuits are stabilized after turing it on, then start adjustment.

Procedure:

ELECTRIC VOLUME ADJ. MENU

```
**************************************************
              ELECTRIC VOLUME
**************************************************
        [1]     CDS SAMPLING PULSE
        [ESC]   RETURN TO MAIN MENU
          PLEASE SELECT [1] OR [ESC]
```

Press **1** key.

Perform adjustment according to the computer display hereafter.
See "7. Error Messages" if an error message appears on the computer display.

6.5 Digital Adjustment Procedure

Before Starting Adjstment

When EEP ROM or the PC circuit board is replaced, initialize the EEP ROM, referring to "6.3 Initial Setting By Model" then perform all the digital adjustments

(1) Start the SMAP.

MAIN MENU

```
**************************************************
          MANUAL ADJUSTMENT PROGRAM
**************************************************
                        :
        [C]     ADJUSTMENT
                        :
        PLEASE SELECT [A] - [E] OR [ESC]
```

(2) Press **C** key.

ADJUSTMENT MENU [For TYPE S9, S9E, S2, S2E]

```
**************************************************
                  ADJUSTMENT
**************************************************
        [1]     AUTO IRIS CONTROL
        [2]     MATRIX
        [3]     WHITE BALANCE
        [4]     CHROMA GAIN
        [ESC]   RETURN TO MAIN MENU
        PLEASE SELECT [1]- [4] OR [ESC]
```

ADJUSTMENT MENU [For TYPE K9, K9E, K2, K2E]

```
**************************************************
                  ADJUSTMENT
**************************************************
        [1]     AUTO IRIS CONTROL
        [ESC]   RETURN TO MAIN MENU
          PLEASE SELECT [1] OR [ESC]
```

(3) Select the number of the required adjustment.

Notes: 1. If [ESC] (escape) is pressed, the computer's display returns toMAIN MENU display.
2. To complete adjustment, press the [ESC] (escape) twice to restore the MS-DOS screen and then turn off the camera and jig.

(1) Auto Iris Control Adjustment

Purpose:

To set the iris control data.

Incompleted Phenomenon:

The picture becomes too bright.
The picture becomes too dark.

Condition:

Point the camera at the light box without a chart to full the screen (at wide-angle).

Procedure:

ADJUSTMENT MENU

```
**************************************************
                  ADJUSTMENT
**************************************************
        [1]     AUTO IRIS CONTROL
                      :
```

Press **1** key.

Perform adjustment according to the computer display hereafter.
See "7. Error Messages" if an error message appears on the computer display.

```
ADJUSTMENT FINISHED
PRESS ANY KEY
```

Press any key to return to ADJUSTMENT MENU display.

Turn the power off for 5 seconds and then on again.

(2) Matrix Adjustment *[For TYPE S9, S9E, S2, S2E]* (Fig. 3-2)

Purpose:

To compensate for uneveness in the chroma signal.

Incompleted Phenomenon:

Color reproduction becomes defective.

Equipment/Jig:

Oscilloscope

Test Point:

Video Out

Condition:

Point at a color bar chart.

Procedure:

ADJUSTMENT MENU

```
**************************************************
                  ADJUSTMENT
**************************************************
                      :
        [2]     MATRIX
                      :
      PLEASE SELECT [1]- [4] OR [ESC]
```

Press **2** key.

```
« ADJUSTMENT OF BLUE MATRIX »
        ROUGH ADJUSTMENT
[U]             UP
[D]             DOWN
        FINE ADJUSTMENT
[Ctrl] + [U]    UP
[Ctrl] + [D]    DOWN
[ENTER]         RETURN TO MENU
[ESC]           QUIT
```

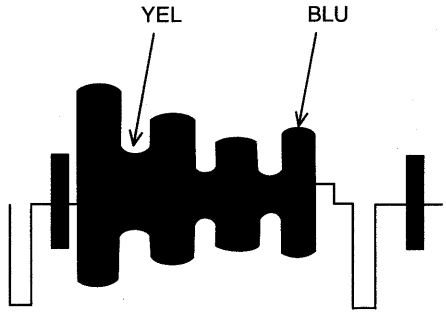
Press the **D** key to minimize the yellow (YEL) level.
Press the **U** key so the ratio between yellow (YEL) and blue (BLU) levels is 1:4.
Press the [Ctrl] key and hold it down, then press the **U** and **D** keys so the ratio between yellow (YEL) and blue (BLU) levels is 1:4.

Press [Enter] Key, and the dispaly changes as follows.

« ADJUSTMENT OF BLUE MATRIX »
DATA WRITING TO EEPROM

« ADJUSTMENT OF BLUE MATRIX »
ADJUSTMENT FINISHED
PRESS ANY KEY

Press any key to return to ADJUSTMENT MENU display.



YLE : BLU
1 : 4

Fig. 3-2

(3) White Balance Adjustment *[For TYPE S9, S9E, S2, S2E]*

Purpose:

To set white balance under the color temperature which becomes a reference for the auto white balance circuit.

Incompleted Phenomenon:

Color of the subject is different from that of the picture.
A white subject is not seen as white.

Test Point:

Video Out

Condition:

Attach a C12 filter.
Point at a gray scale chart (at wide-angle).

Procedure:

ADJUSTMENT MENU

```
**************************************************
                  ADJUSTMENT
**************************************************
                      :
          [3]     WHITE BALANCE
                      :
          PLEASE SELECT [1]- [4] OR [ESC]
```

Press **3** key.

« ADJUSTMENT OF WHITE BALANCE »
ADJUSTMENT FINISHED
PRESS ANY KEY

Press any key to return to ADJUSTMENT MENU display.

See "7. Error Messages" if an error message appears on the computer display.

(4) Chroma Gain Adjustment *[For TYPE S9, S9E, S2, S2E]* (Figs. 3-3, 3-4, 3-5)

Purpose:

To set the color saturation under the reference color temperature.

Incompleted Phenomenon:

Color of the picture is denser than that of the subject.
Color of the picture is lighter than that of the subject.

Equipment/Jig:

Oscilloscope (Vectorscope)

Test Point:

Video Out

Condition:

Attach a C12 filter.
Point at a color bar chart.

Procedure:

ADJUSTMENT MENU

```
**************************************************
                  ADJUSTMENT
**************************************************
                     :
          [4]      CHROMA GAIN
          [ESC]    RETURN TO MAIN MENU
          PLEASE SELECT [1]- [4] OR [ESC]
```

Press **4** key.

```
        « ADJUSTMENT OF CHROMA GAIN »
              ROUGH ADJUSTMENT
    [U]          CHROMA GAIN UP
    [D]          CHROMA GAIN DOWN
              FINE ADJUSTMENT
    [Ctrl] + [U]  CHROMA GAIN UP
    [Ctrl] + [D]  CHROMA GAIN DOWN
    [ENTER]       SAVE & RETURN TO MENU
    [ESC]         QUIT
```

WhenUsing an Oscilloscope:

Press the **U** and **D** keys to set the red level to around 570mVp-p.
Press the [Ctrl] key and hold it down, then press the **U** and **D** keys so the red level is 570mV ± 20mVp-p. (Fig. 3-3)

When Using a Vectorscope:

Press the **U** and **D** keys to set the red vector to around 200% of the burst.
Press the [Ctrl] key and hold it down, then press the **U** and **D** keys so the red vector is 200% ± 5%. (Figs. 3-4, 3-5)

Press [Enter] key, and the display changes as follows.

```
« ADJUSTMENT OF CHROMA GAIN »
DATA WRITING INTO EEPROM.
```

```
« ADJUSTMENT OF CHROMA GAIN »
ADJUSTMENT FINISHED.
PRESS ANY KEY.
```

Press any key to return to ADJUSTMENT MENU display.

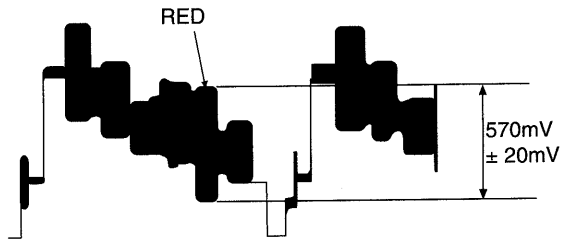


Fig. 3-3

[For TYPE S9, S2]

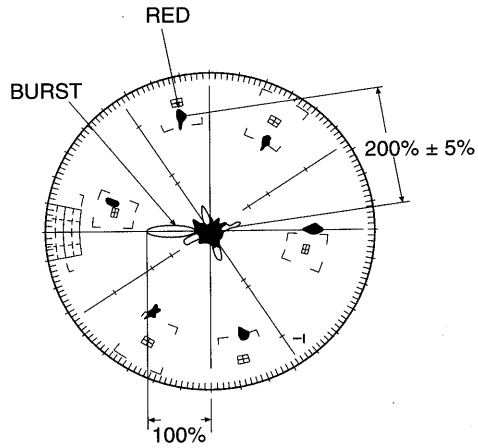


Fig. 3-4

[For TYPE S9E, S2E]

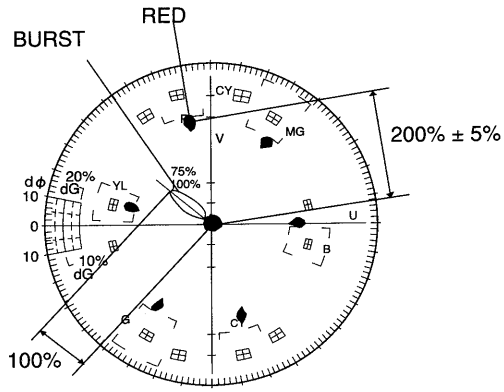


Fig. 3-5

6.6 Autofocus Adjustment Procedure

Before Starting Adjustment
Be sure to perform this adjustment after replacing or initializing the lens block, parts in the PC circuit board (EEPROM).

(1) Start the SMAP.

MAIN MENU

```
**************************************************
        MANUAL ADJUSTMENT PROGRAM
**************************************************
                      :
          [D]     AUTO FOCUS
                      :
        PLEASE SELECT [A] - [E] OR [ESC]
```

(2) Press **D** key.

AF ADJ. MENU

```
**************************************************
            AUTO FOCUS ADJUSTMENT
**************************************************
[1]     ADJUSTMENT OF ZOOM/FOCUS TRACKING
[2]     ADJUSTMENT OF AF NOISE LEVEL
[ESC]   RETURN TO MENU
        PLEASE SELECT [1], [2] OR [ESC]
```

(3) Select the number of the required adjustment.

Note: To complete adjustment, press the [ESC] (escape) twice to restore the MS-DOS screen and then turn off the camera and jig.

(1) Zoom Trace Adjustment

Purpose:
To set the out-of-focus correction level during zooming.
Incompleted Phenomenon:
Focus is lost during zooming.
Equipment/Jig:
Color Video Monitor
Backfocus Chart
Test Point:
Video Out
Condition:
Point at the backfocus chart, 1500 ± 5 mm away from the lens surface.
Light the chart with 200-400 lux.
Caution When Adjustment:
1) Measure the distance between the chart and lens surface precisely.
2) Place the chart as parallel as possible to the lens surface.
3) The backfocus chart should always be at the center of the monitor screen when the zoom is set to the wide-angle and telephoto ends.
4) The zoom trace adjustment procedure is completed within 2 minutes after it is selected.
5) Do not place any obstruction between the lens and chart during adjustment.
Procedure:

AF ADJ. MENU

```
**************************************************
            AUTO FOCUS ADJUSTMENT
**************************************************
[1]     ADJUSTMENT OF ZOOM/FOCUS TRACKING
[2]     ADJUSTMENT OF AF NOISE LEVEL
[ESC]   RETURN TO MENU
        PLEASE SELECT [1], [2] OR [ESC]
```

Press **1** key.

Perform adjustment according to the computer display hereafter.
See "7. Error Messages" if an error message appears on the computer display.

(2) AF Noise Level Adjustment

Purpose:

To set the noise level in the autofocus circuit.

Incompleted Phenomenon:

It takes time until a subject is brought into focus.
Correct focus is not obtained.

Equipment/Jig:

Color Video Monitor

Test Point:

Video Out

Condition:

Set the focus to AUTO.
Point at a light box without a chart inserted at a distance of up to 10cm.

Caution When Adjustment:

1) Place the light box as parallel as possible to the lens surface.
2) The AF noise level adjustment procedure will be completed within thirty seconds after it is selected.

Procedure:

AF ADJ. MENU

```
**************************************************
          AUTO FOCUS ADJUSTMENT
**************************************************
[1]    ADJUSTMENT OF ZOOM/FOCUS TRACKING
[2]    ADJUSTMENT OF AF NOISE LEVEL
[ESC]  RETURN TO MENU
        PLEASE SELECT [1], [2] OR [ESC]
```

Press **2** key.

Perform adjustment according to the computer display hereafter.
See "7. Error Messages" if an error message appears on the computer display.

6.7 Spot Noise Adjustment Procedure

Before Starting Adjustment

1. The spot noise is identified as the fine white noise that appears when the lens cap is attached after the power is turn on.
2. Perform this adjustment only for products with which spot noise occurs. (However, there is no problem even if products free from spot noise are adjusted.)
3. After replacing the CCD image sensor or PC circuit board (EEPROM), check whether or not spot noise occurs and then proceed with adjustment.

(1) Start the SMAP.

MAIN MENU

```
**************************************************
          MANUAL ADJUSTMENT PROGRAM
**************************************************
                      :
          [E]    SPOT NOISE
        PLEASE SELECT [A] - [E] OR [ESC]
```

(2) Cap the lens.

(3) Connect the color video monitor to video out.

(4) Press **E** key.

(5) Perform adjustment according to the computer display hereafter.
See "7. Error Messages" if an error message appears on the computer display.

Note: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera and jig

7. ERROR MESSAGE

7.1 Camera Electric Volume and Digital Adjustments

ERROR MESSAGE	COUNTERMEASURE
ERROR OCCURRED. IRIS TROUBLE PRESS ANY KEY	· Check whether or not power is supplied. · Check the values of the iris drive circuit. · Defective soldering, damage to pattern, etc. in the above circuit. · Check the iris block and replace it if necessary.
ERROR OCCURRED ON dax ADJUSTMENT PRESS ANY KEY	· Check the values in the hall amp circuit. · Defective soldering, damage to pattern, etc. in the above circuit.
D RANGE OVER. ERROR ON dax ADJUSTMENT PRESS ANY KEY.	· Check the values in the hall amp circuit. · Defective soldering, damage to pattern, etc. in theabove circuit.
ERROR OCCURRED ON da0 and da1 ADJUSTMENT PRESS ANY KEY	· Check the values in the hall amp circuit and its peripheral circuits. · Defective soldering, damage to pattern, etc. in the above circuits.
FILE NOT FOUND !!!! PRESS ANY KEY	· The adjustment program (file) cannot be found. · Check the adjustment floppy disk and replace it if necessary.
FILE OPEN ERROR !!!! PRESS ANY KEY	· The adjustment program (file) does not start. · Check the adjustment floppy disk and replace it if necessary.
ERROR OCCURRED ON C DUTY ADJUSTMENT PRESS ANY KEY	· Check the values of the iris drive circuit. · Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ON FDET ADJUSTMENT PRESS ANY KEY	· Supply power again and re-adjust. · Check the values in the hall amp circuit. · Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED. ZOOM DOES NOT WORK PRESS ANY KEY	· Supply power again and re-adjust.
TOO BRIGHT PRESS ANY KEY	· The subject is too bright. · Move the camera further away from the light box.
TOO DARK PRESS ANY KEY	· The subject is too dark. · Check the light box. · Move the camera closer to the light box.
D RANGE OVER ERROR ON HALL AMP IRIS CANNOT OPEN ANY MORE PRESS ANY KEY	· Supply power again and re-adjust. · The subject is too dark. · Check the light box. · Move the camera closer to the light box. · Check the values in the hall amp circuit. · Defective soldering, damage to pattern, etc. in the above circuit.
STAURATION ERROR. TOO BRIGHT PRESS ANY KEY	· The subject is too bright. · Move the camera further away from the light box.
CAN'T ADJUST WHITE BALANCE PLEASE RETRY PRESS ANY KEY	· The subject is too bright or too dark. · Check the light box. · Move the camera closer to or away from the light box. · Supply power again and re-adjust.

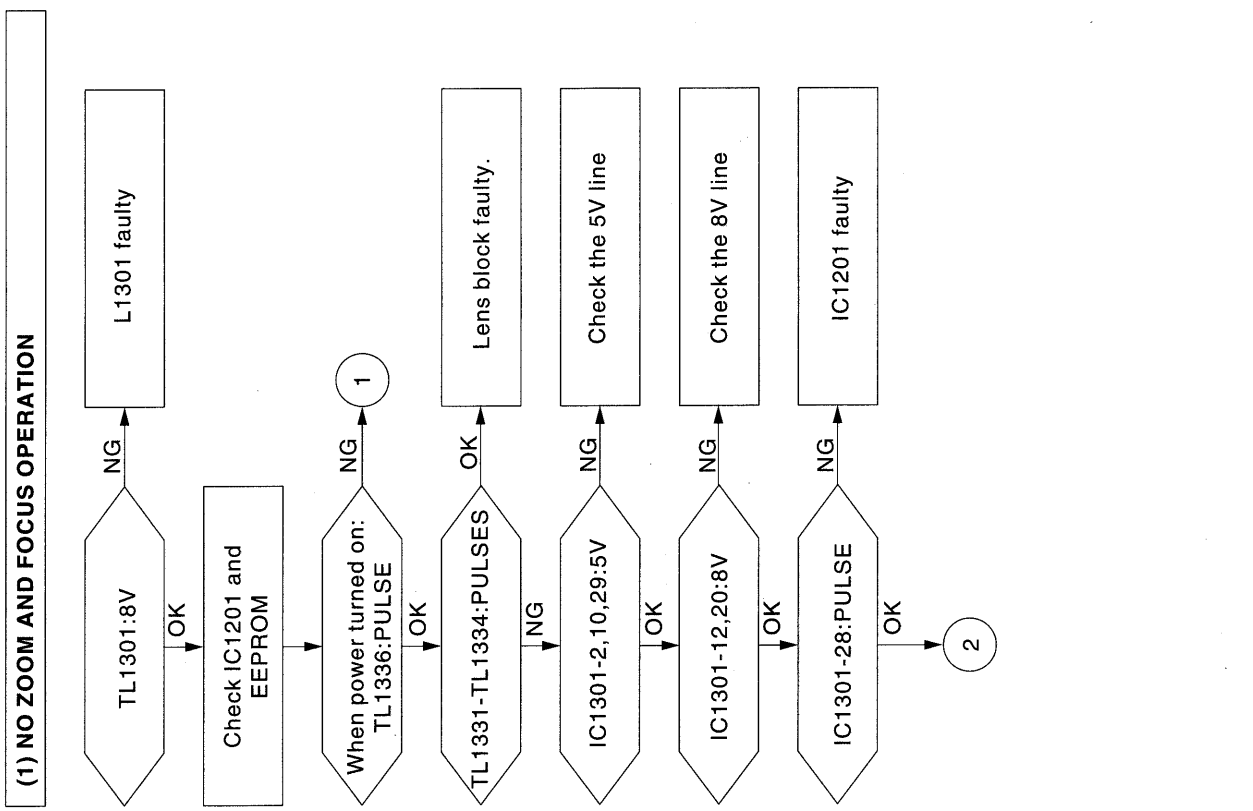
7.2 Autofocus Adjustment

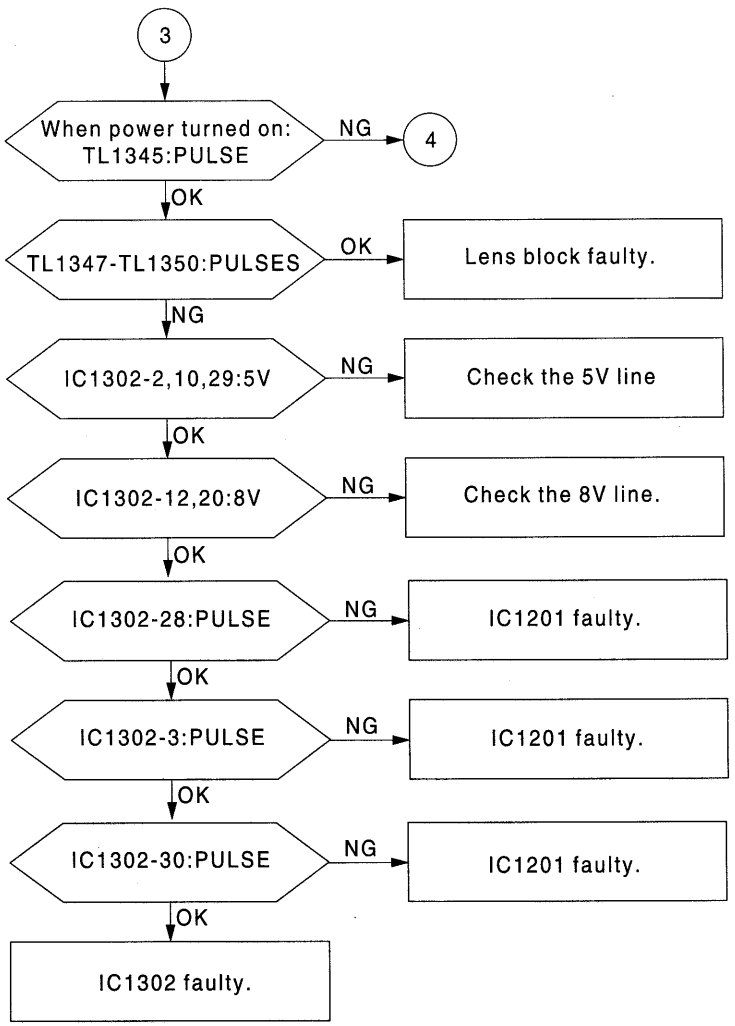
ERROR MESSAGE	COUNTERMEASURE
ERROR OCCURRED. ZOOM DOES NOT WORK PRESS ANY KEY	· Supply power again and re-adjust.
TIME OUT ERROR ON FOCUS	· Check the conditions of subject. · If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. · Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON ZOOM	· If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. · Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON AF STEP	· Check the conditions of subject. · If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. · Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
AF LIMIT OVER	· Check the conditions of subject. · If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. · Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
AF ERROR	· If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. · Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
TOO DARK	·Insufficient lighting. Check the subject.

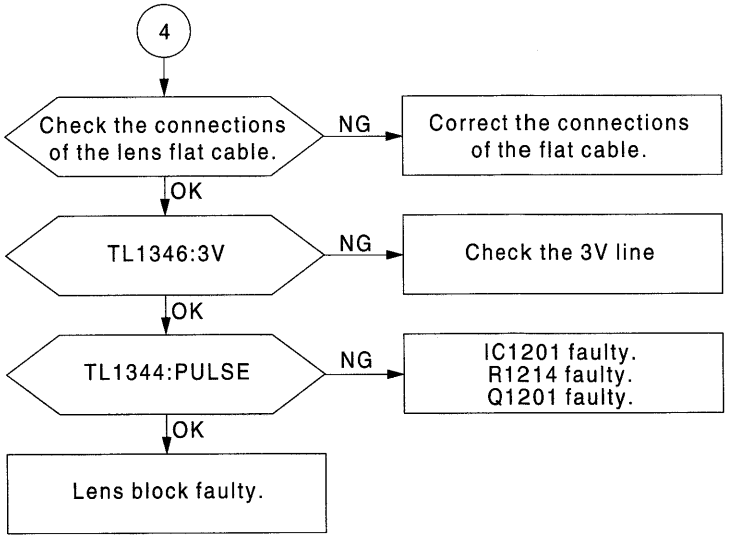
7.3 Spot Noise Adjustment

ERROR MESSAGE	COUNTERMEASURE
ERROR!! SPOT NOISE COMPENSATION IS STOPPED BY INITIAL DATA. PLEASE CHECK THE EEPROM. PRESS ANY KEY.	· Spot noise compensation is inhibited by the data in the EEPROM. · Turn the power on again. · Data in the EEPROM is defective. (Initialize it.) · Check the EEPROM,and if necessary,replace it.
ERROR!! THRESHOLD DATA ERROR. PLEASE CHECK THE EEPROM. PRESS ANY KEY.	· Turn the power on again. · Data in the EEPROM is defective. (Initialize it.) · Check the EEPROM,and if necessary,replace it.
ERROR!! THE SPOT NOISE IS TOO MANY. CAN'T COMPENSATE ANY MORE. PRESS ANY KEY.	· The amount of spot noise that can be compensated reaches the limit. · Turn the power on again. · Check the CCD image sensor,and if necessary,replace it.

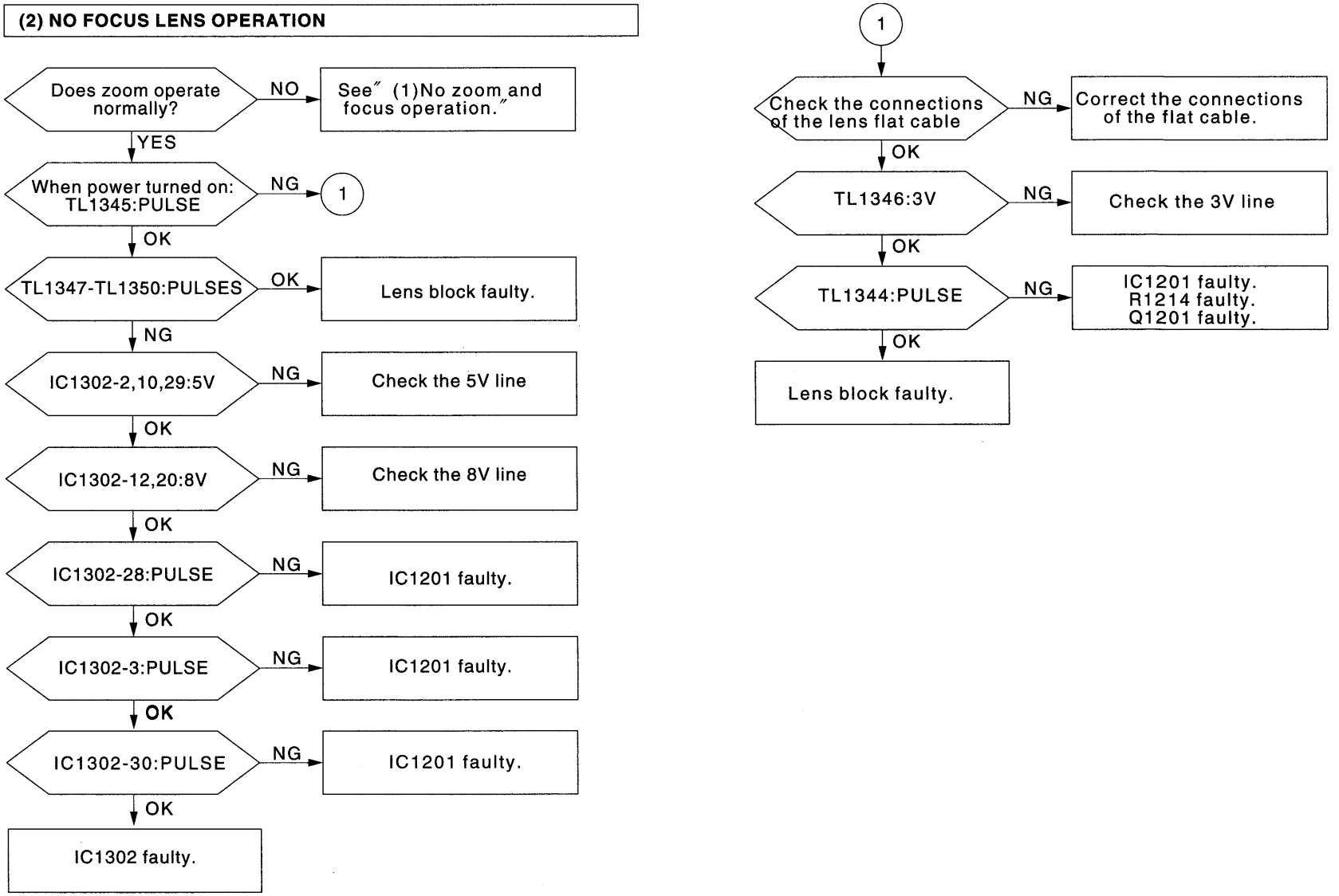
8. TROUBLESHOOTING OF AUTOFOCUS



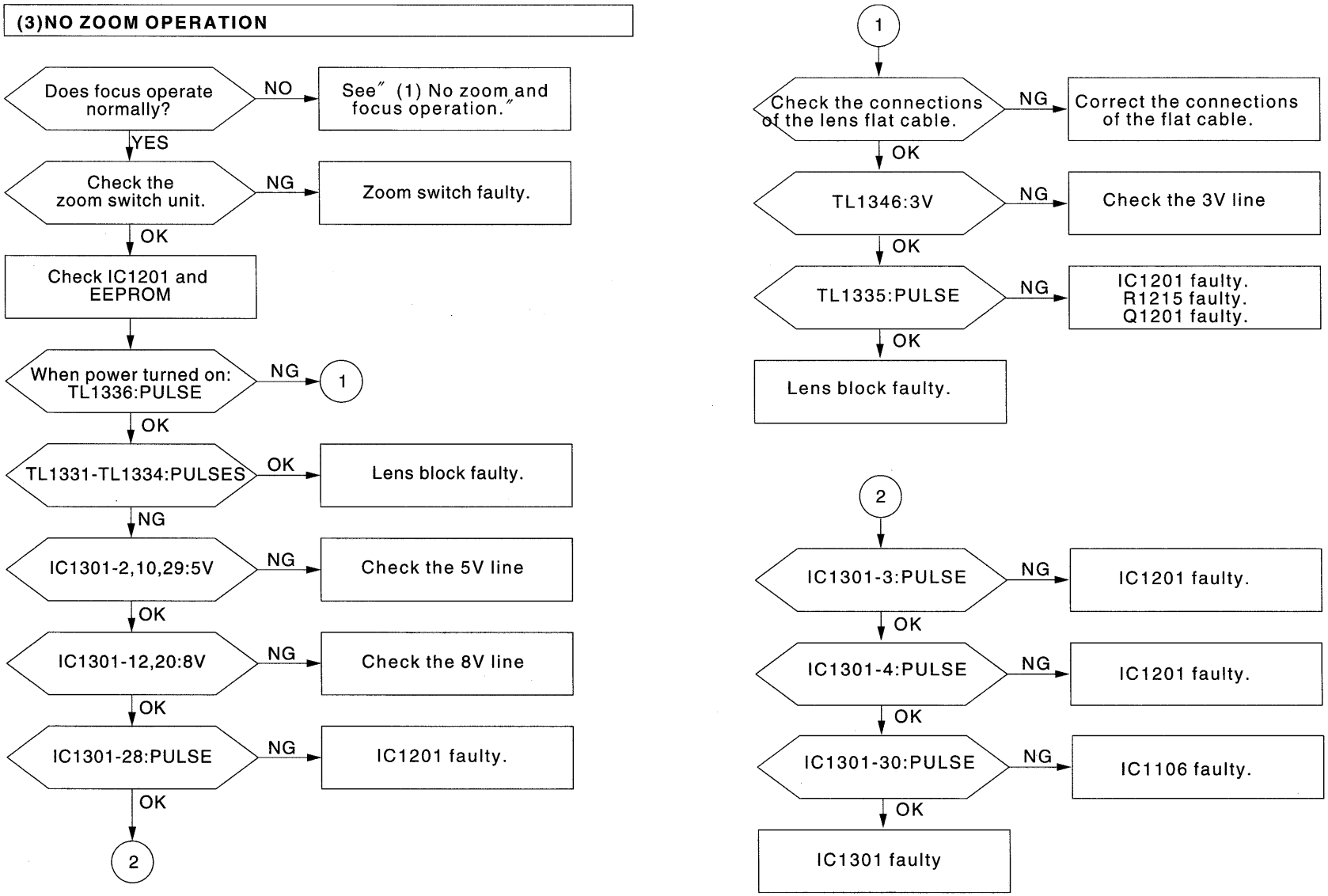

3
When power turned on: TL1345:PULSE
NG
4
OK
TL1347-TL1350:PULSES
OK
Lens block faulty.
NG
IC1302-2,10,29:5V
NG
Check the 5V line
OK
IC1302-12,20:8V
NG
Check the 8V line.
OK
IC1302-28:PULSE
NG
IC1201 faulty.
OK
IC1302-3:PULSE
NG
IC1201 faulty.
OK
IC1302-30:PULSE
NG
IC1201 faulty.
OK
IC1302 faulty.


4
Check the connections of the lens flat cable.
NG
Correct the connections of the flat cable.
OK
TL1346:3V
NG
Check the 3V line
OK
TL1344:PULSE
NG
IC1201 faulty.
R1214 faulty.
Q1201 faulty.
OK
Lens block faulty.

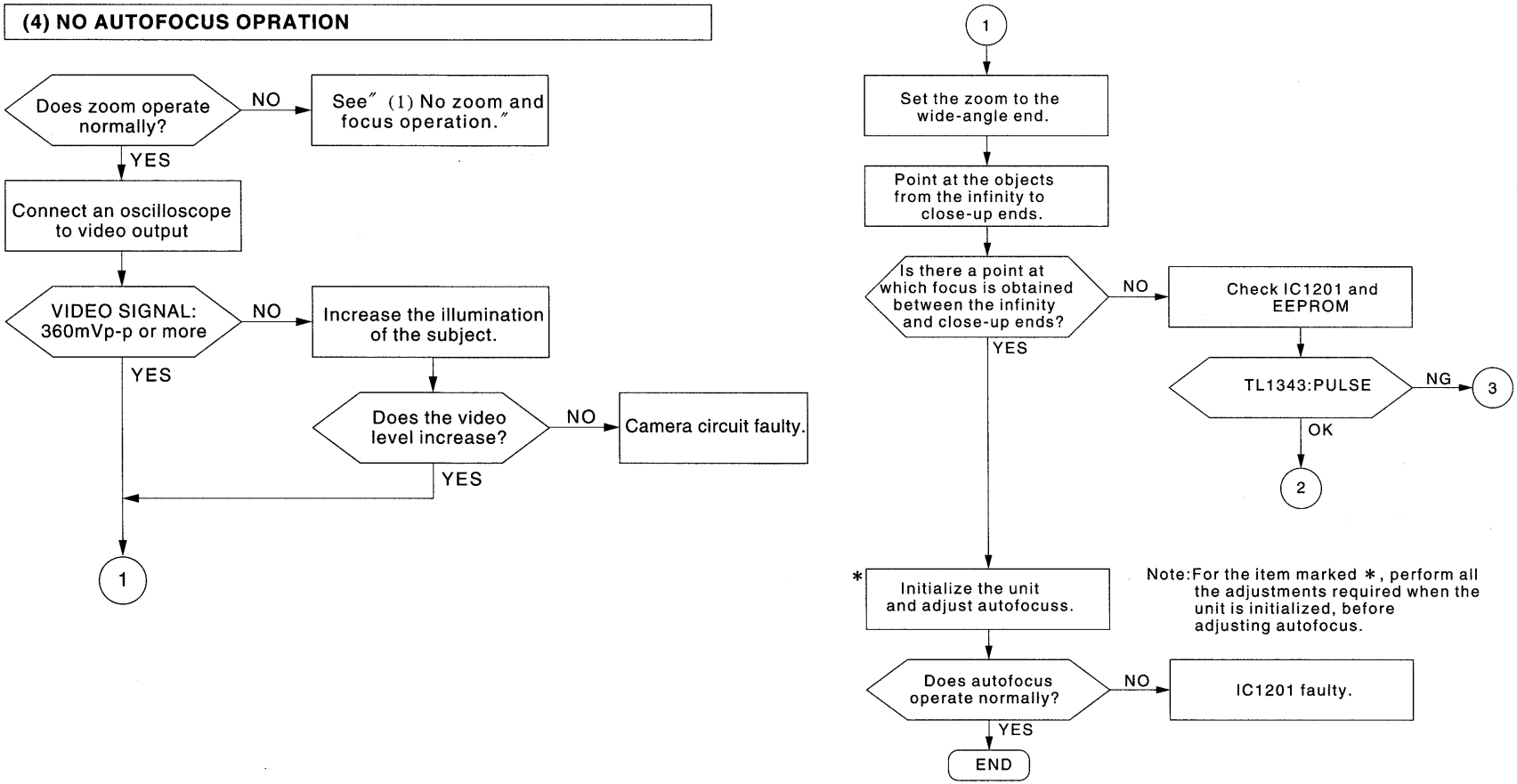
(2) NO FOCUS LENS OPERATION

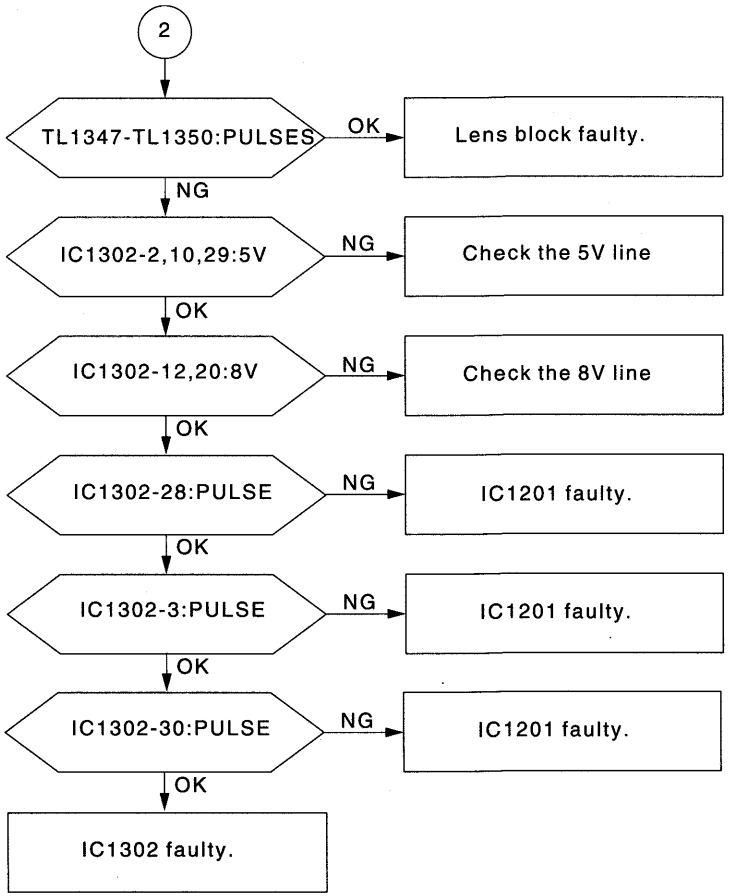


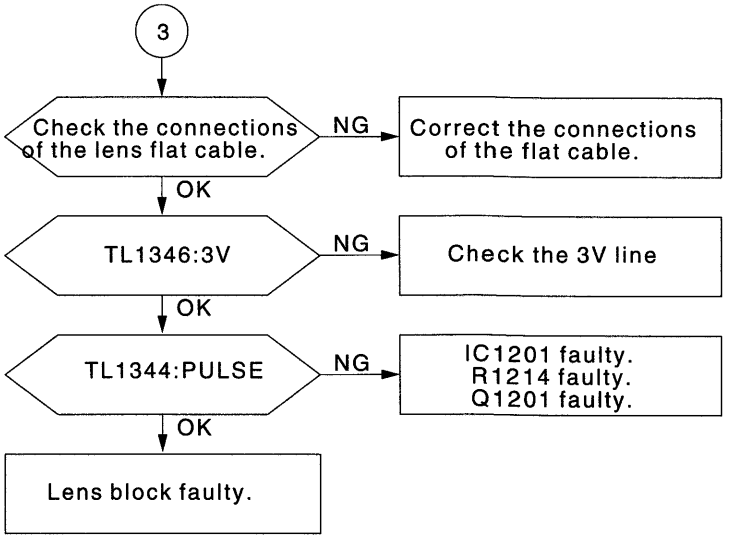
(3)NO ZOOM OPERATION



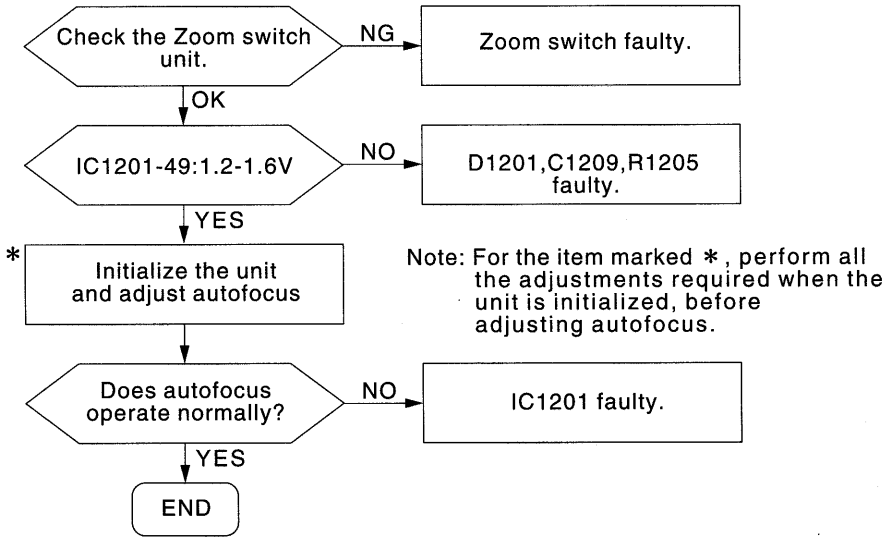
(4) NO AUTOFOCUS OPRATION



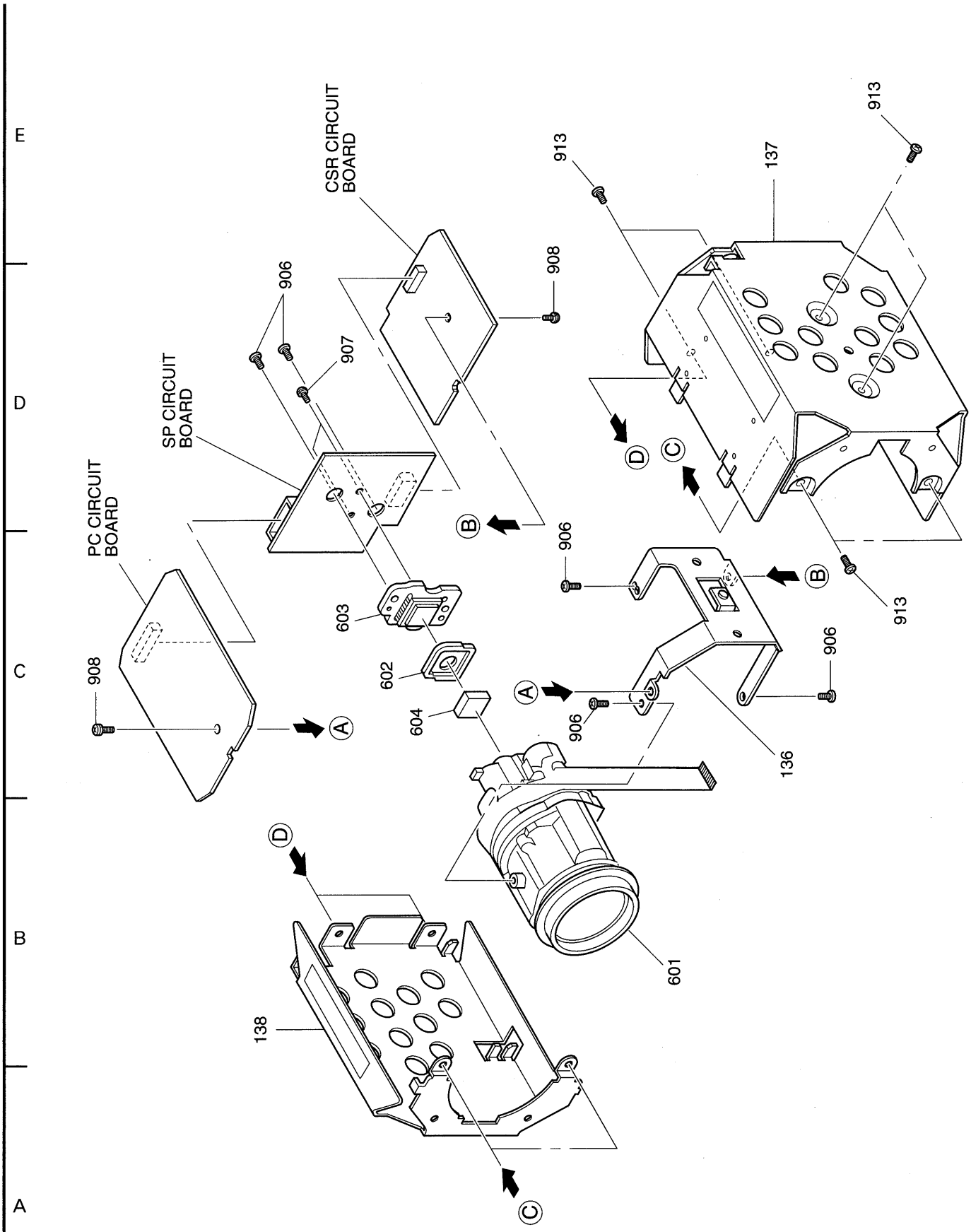

2
TL1347-TL1350:PULSES
OK
Lens block faulty.
NG
IC1302-2,10,29:5V
NG
Check the 5V line
OK
IC1302-12,20:8V
NG
Check the 8V line
OK
IC1302-28:PULSE
NG
IC1201 faulty.
OK
IC1302-3:PULSE
NG
IC1201 faulty.
OK
IC1302-30:PULSE
NG
IC1201 faulty.
OK
IC1302 faulty.


3
Check the connections of the lens flat cable.
NG
Correct the connections of the flat cable.
OK
TL1346:3V
NG
Check the 3V line
OK
TL1344:PULSE
NG
IC1201 faulty.
R1214 faulty.
Q1201 faulty.
OK
Lens block faulty.

(5) SUBJECT IS GREATLY OUT-OF-FOCUS WHEN ZOOMED.



Note: For the item marked *, perform all the adjustments required when the unit is initialized, before adjusting autofocus.


CSR CIRCUIT BOARD
SP CIRCUIT BOARD
PC CIRCUIT BOARD
913
137
908
906
907
603
602
604
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CHAPTER 5 REPLACEMENT PARTS LIST

1. MECHANICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION
		MECHANISM SECTION
136	NA19641	BRACKET
137	NA19621	BRACKET
138	NA19631	BRACKET
601	KQ10791	LENS ASSY
602	NX11252	RUBBER
603	UE13335	SENSOR ASSY
604	DT10251	CRYSTAL
906	7775945	SCREW(2X5)
907	8650103	SCREW(2X3)
908	8650105	SCREW (2X5)
913	7775963	SCREW(2X3)

2. ELECTRICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION
		CAPACITORS
C1001	0893113	CERAMIC CHIP 10PF+-0.5% 50V[TYPE S2,K2]
C1001	0893107	CERAMIC CHIP 5PF+-0.5% 50V[TYPE S2E,K2E]
C1003	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1004	0893211	CERAMIC CHIP 1500PF+-10% 50V
C1005	AA00422R	CERAMIC CHIP 10UF 16V
C1006	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C1007	AA00393R	CHIP CERAMIC 1.0UF+80-20% 50V
C1008	AA00393R	CHIP CERAMIC 1.0UF+80-20% 50V
C1009	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C1010	AA00393R	CHIP CERAMIC 1.0UF+80-20% 50V
C1011	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1012	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1101	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1102	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1103	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1104	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1105	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1106	0206673	ELECTROLYTIC 33UF 6.3V
C1107	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1108	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1109	0893179	CERAMIC CHIP 0.1UF+-10% 16V
C1110	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1111	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V
C1112	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V
C1113	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1114	0893179	CERAMIC CHIP 0.1UF+-10% 16V
C1121	AA00412R	CERAMIC CHIP 10UF+-80-20% 16V
C1122	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1123	AA00412R	CERAMIC CHIP 10UF+-80-20% 16V
C1124	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1125	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1126	0893117	CERAMIC CHIP 22PF+-5% 50V[TYPE S2,K2]
C1126	0893113	CERAMIC CHIP 10PF+-5% 50V[TYPE S2E,K2E]
C1127	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C1128	0893119	CERAMIC CHIP 33PF+-5% 50V
C1129	0893119	CERAMIC CHIP 33PF+-5% 50V
C1130	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1131	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V
C1132	0893119	CERAMIC CHIP 33PF+-5% 50V
C1132	0893119	CERAMIC CHIP 33PF+-5% 50V
C1133	AA00412R	CERAMIC CHIP 10UF+-80-20% 16V
C1134	AA00412R	CERAMIC CHIP 10UF+-80-20% 16V
C1135	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1136	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1137	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1138	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1139	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1140	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1141	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1143	0206673	ELECTROLYTIC 33UF 6.3V
C1160	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1176	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1177	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1178	0893123	CERAMIC CHIP 56PF+-5% 50V
C1180	0893123	CERAMIC CHIP 56PF+-5% 50V
C1182	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1183	0893122	CERAMIC CHIP 47PF+-5% 50V
C1184	0202322	CHIP CERAMIC 33PF+-2% 50V
C1185	0893121	CERAMIC CHIP 39PF+-5% 50V
C1187	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1191	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1192	0893175	CERAMIC CHIP 1000PF+-5% 50V

SYMBOL NO	P-NO	DESCRIPTION
C1201	AA00393R	CHIP CERAMIC 1.0UF+80-20% 50V
C1202	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1203	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1204	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1205	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1206	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1207	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1208	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1209	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1212	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1214	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C1215	0806119	ELECTROLYTIC 4.7UF 10V
C1301	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C1302	0893215	CERAMIC CHIP 3300PF+-10% 50V
C1303	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1304	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1305	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1306	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C1307	0893215	CERAMIC CHIP 3300PF+-10% 50V
C1308	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1309	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1310	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1311	0206672	CHIP CAPACITOR 10UF+-20% 16V
C1312	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1313	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1317	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1318	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1319	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1320	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1351	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1352	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1353	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1354	0893132	CERAMIC CHIP 270PF+-5% 50V
C1355	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1356	0893007	CERAMIC CHIP 0.082UF+-10% 16V
C1357	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1358	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1359	0893133	CERAMIC CHIP 330PF+-5% 50V
C1360	0893133	CERAMIC CHIP 330PF+-5% 50V
C1361	0893133	CERAMIC CHIP 330PF+-5% 50V
C1362	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1501	0206672	CHIP CAPACITOR 10UF+-20% 16V
C1502	0893165	CERAMIC CHIP 180PF+-5% 50V
C1503	0893202	CERAMIC CHIP 330PF+-10% 50V
C1504	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1505	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1506	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1507	0209942	CERAMIC CHIP 100PF+-5% 50V
C1508	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1510	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1512	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1513	0893165	CERAMIC CHIP 180PF+-5% 50V
C1514	0893202	CERAMIC CHIP 330PF+-10% 50V
C1515	0893158	CERAMIC CHIP 56PF+-5% 50V
C1516	0893203	CERAMIC CHIP 390PF+-10% 50V
C1517	0893165	CERAMIC CHIP 180PF+-5% 50V
C1518	0893202	CERAMIC CHIP 330PF+-10% 50V
C1519	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1520	0206671	ELECTROLYTIC 10UF 10V
C1521	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1522	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1523	0206671	ELECTROLYTIC 10UF 10V
C1524	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1525	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1526	0206671	ELECTROLYTIC 10UF 10V
C1527	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1528	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1529	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1530	AA00393R	CHIP CERAMIC 1.0UF+80-20% 50V
C1531	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1532	AA00393R	CHIP CERAMIC 1.0UF+80-20% 50V
C1601	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1602	0206671	ELECTROLYTIC 10UF 10V
C1603	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1604	0806129	ELECTROLYTIC 22UF 10V
C1605	AD10273R	CHIP RESISTOR 100UF+-20% 6.3V
C1606	AD10252R	ELECTROLYTIC 1.0UF 20V
C1608	0893225	CERAMIC CHIP 0.1UF+80-20% 16V [TYPE K2,K2E]
C1610	0893179	CERAMIC CHIP 0.1UF+-10% 16V[TYPE S2,S2E]
C1611	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1612	0893179	CERAMIC CHIP 0.1UF+-10% 16V
C1613	0893011	CERAMIC CHIP 0.15UF+-10% 16V
C1614	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V
C1615	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1616	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1617	0893114	CERAMIC CHIP 12PF+-5% 50V[TYPE S2E]
C1617	0893117	CERAMIC CHIP 22PF+-5% 50V[TUPE S2]

RESISTORS

R1001	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R1002	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1004	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1007	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1101	AQ00231R	CHIP RESISTOR 24KOHM+-1% 1/16W
R1121	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1122	0790011	CHIP RESISTOR 10 OHM+-5% 1/16W [TYPE S2,K2]
R1123	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R1124	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R1125	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1126	AQ00215R	CHIP RESISTOR 6.2KOHM+-1% 1/10W
R1127	AQ00239R	CHIP RESISTOR 51KOHM+-1% 1/16W [TYPE S2,K2]
R1127	AQ00238R	CHIP RESISTOR 47KOHM+-1% 1/16W [TYPE S2E,K2E]
R1128	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1155	AQ00198R	CHIP RESISTOR 1.5KOHM+-1% 1/16W
R1156	AQ00212R	CHIP RESISTOR 4.7KOHM+-1% 1/16W
R1157	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1158	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W
R1159	0104545	CHIP RESISTOR 1.24KOHM+-1% 1/16W
R1160	AQ00215R	CHIP RESISTOR 6.2KOHM+-1% 1/10W [TYPE S2,K2]
R1160	0104549	CHIP RESISTOR 5.36KOHM+-1% 1/16W [TYPE S2E,K2E]
R1161	AQ00245R	CHIP RESISTOR 82KOHM+-1% 1/16W [TYPE S2,K2]
R1162	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W [TYPE S2,S2E]
R1164	AQ00205R	CHIP RESISTOR 2.7KOHM+-1% 1/16W [TYPE S2,S2E]
R1165	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W [TYPE S2,S2E]
R1173	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1174	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1175	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1176	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1177	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W

SYMBOL NO	P-NO	DESCRIPTION
R1178	AQ00183R	CHIP RESISTOR 390 OHM+-1% 1/16W
R1179	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1201	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1202	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1203	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1204	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1205	AQ00223R	CHIP RESISTOR 12KOHM+-1% 1/16W
R1206	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1207	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1208	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1209	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1214	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R1215	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R1216	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1217	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1220	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1221	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1222	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R1223	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R1224	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R1306	0103818	CHIP RESISTOR 8.2OHM+-10% 0.1W
R1307	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R1308	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1309	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1310	0103818	CHIP RESISTOR 8.2OHM+-10% 0.1W
R1311	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R1313	0103812	CHIP RESISTOR 2.7OHM+-10% 0.1W
R1314	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R1315	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1316	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1317	0103812	CHIP RESISTOR 2.7OHM+-10% 0.1W
R1318	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R1351	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R1352	0790069	CHIP RESISTOR 0.27MOHM+-5% 1/16W
R1353	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1354	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1355	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1356	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1357	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1358	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R1359	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W
R1360	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1361	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R1362	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W
R1363	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1364	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1365	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1366	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R1367	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1368	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1370	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R1371	0790029	CHIP RESISTOR 270 OHM+-5% 1/16W
R1372	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1374	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R1375	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R1376	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R1378	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R1501	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1505	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1509	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1510	AQ00231R	CHIP RESISTOR 24KOHM+-1% 1/16W
R1512	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R1515	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R1516	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1517	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W

SYMBOL NO	P-NO	DESCRIPTION
R1519	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1520	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1521	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R1522	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1524	0104724	CHIP RESISTOR 10KOHM+-1% 1/16W
R1525	0105192	CHIP RESISTOR 1KOHM+-0.5% 1/16W
R1526	0104723	CHIP RESISTOR 4.7OHM+-1% 1/16W
R1527	0105212	CHIP RESISTOR 68KOHM+-0.5% 1/16W
R1528	0104727	CHIP RESISTOR 15KOHM+-1% 1/16W
R1529	0104724	CHIP RESISTOR 10KOHM+-1% 1/16W
R1531	0105209	CHIP RESISTOR 3.3KOHM+-0.5% 1/16W
R1532	0104724	CHIP RESISTOR 10KOHM+-1% 1/16W
R1533	0105202	CHIP RESISTOR 39KOHM+-0.5% 1/16W
R1534	0105215	CHIP RESISTOR 47KOHM+-5% 1/16W
R1535	0105205	CHIP RESISTOR 510 OHM+-0.5% 1/16W
R1536	0105194	CHIP RESISTOR 24000HM+-0.5% 1/16W
R1601	0103829	CHIP RESISTOR 68OHM+-5% 0.1W
R1605	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R1606	0104153	CHIP RESISTOR 470 OHM+-10% 0.125W
R1607	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1608	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1610	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R1611	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1612	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1613	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R1616	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1617	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1618	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R1620	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R1621	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1625	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W [TYPE S2,S2E]
R1626	AQ00205R	CHIP RESISTOR 2.7KOHM+-1% 1/16W[TYPE S2]
R1626	AQ00209R	CHIP RESISTOR 3.9KOHM+-1% 1/16W[TYPE S2E]
R1627	AQ00203R	CHIP RESISTOR 2.2KOHM+-1% 1/16W[TYPE S2]
R1627	AQ00207R	CHIP RESISTOR 3.3KOHM+-1% 1/16W[TYPE S2E]
R1628	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W

SEMI-CONDUCTORS

D1002	CC10291R	DIODE 1SS353
D1151	5337352	DIODE MA132WA
D1171	5337471	DIODE KV1470
D1201	5337422	DIODE DA221
D1202	5337351	DIODE MA132WK
D1351	5337422	DIODE DA221
D1501	CC10291R	DIODE 1SS353
D1502	5337352	DIODE MA132WA
D1503	CC10291R	DIODE 1SS353
D1601	5337391	DIODE D1FS4
IC1002	CK12061R	IC UPD16510GR
IC1101	CK21332U	IC HD49323AF
IC1121	CK22461U	IC HG73C053FE
IC1122	CK23711U	IC MSM51V18165BSL-6TS-K
IC1173	1354381	IC TC7SU04F
IC1174	1354381	IC TC7SU04F
IC1201	CK24081U	IC HD6432237M06TE
IC1202	CK21351R	IC X25097V1-2.7
IC1203	1365592	IC RN5VT28AA-TL
IC1301	1366804	IC MPC17AT85VMEL
IC1302	1366804	IC MPC17AT85VMEL
IC1351	CK20621R	IC UPD5023GS-147-GJG
IC1501	1366251	IC TL1464IPT
IC1601	CK23321R	IC BA7664FV
IC1602	1366081	IC HD74HCT125T

SYMBOL NO	P-NO	DESCRIPTION
IC1603	CK23291R	IC 74VHC4046MTCX
IC1604	5305831	IC TC7S08
Q1001	5328221	TRANSISTOR 2SC2620-QC
Q1151	5328192	TRANSISTOR 2SC2462LD
Q1152	1323231	TRANSISTOR 2SB1462
Q1153	1323231	TRANSISTOR 2SB1462 [TYPE S2,S2E]
Q1201	1323286	TRANSISTOR UMH9N
Q1351	5328192	TRANSISTOR 2SC2462LD
Q1352	5328974	TRANSISTOR 2SC2412K
Q1353	1323142	TRANSISTOR 2SC2411K
Q1501	1308011	TRANSISTOR MPL1
Q1502	1308011	TRANSISTOR MPL1
Q1503	1308011	TRANSISTOR MPL1
Q1504	CA10271R	TRANSISTOR 2SB1424
Q1506	5326421	TRANSISTOR 2SC4081BR
Q1601	1323273	TRANSISTOR DTA143EE
Q1602	1323271	TRANSISTOR DTC144EE
Q1603	1323271	TRANSISTOR DTC144EE
Q1605	1323231	TRANSISTOR 2SB1462 [TYPE S2,S2E]
ZD1171	CC10433R	DIODE(MA3030L)
		TRANSFORMER
T1501	BC10261R	TRANS
		COILS
L1001	BA10334R	COIL 10UH
L1101	BA10334R	COIL 10UH
L1102	BA10334R	COIL 10UH
L1201	BA10334R	COIL 10UH
L1202	BA10334R	COIL 10UH
L1301	BA10693R	COIL
L1302	BA10334R	COIL 10UH
L1501	BA10335R	COIL 22UH
L1503	BA10695R	COIL
L1504	BA10693R	COIL
L1505	BA10695R	COIL
L1506	0773004	COIL 100UH
L1507	0773004	COIL 100UH
L1601	BA10334R	COIL 10UH
L1602	BA10335R	COIL 22UH
L1603	BA10337R	COIL 100UH [TYPE S2,S2E]
		CRYSTALS
X1172	BL10681R	CRYSTAL [TYPE S2,K2]
X1172	BL10682R	CRYSTAL [TYPE S2E,K2E]
		MISCELLANEOUS
BL1121	BM00137R	FILTER
BL1122	BM00137R	FILTER
BL1601	BE10132R	FILTER,LC
BL1602	5172541	FILTER
CP1151	BE10222R	FILTER,LC
CP1171	BE10501R	FILTER
CP1601	BV10211R	FILTER
⚠F1601	5723235	FUSE 1A
PG1001	1830305	CONNECTOR
PG1002	1830117	CONNECTOR
PG1241	1830303	CONNECTOR
PG1302	EA10407R	CONNECTOR
PG1501	1830118	CONNECTOR
PG1601	5666914	MINI PLUG

SYMBOL NO	P-NO	DESCRIPTION

CHAPTER 6 SCHEMATIC, CIRCUIT BOARD AND BLOCK DIAGRAMS/MICROPROCESSOR PIN FUNCTION TABLE

Cautions when using schematic diagrams

Caution for safety

The parts marked ⚠ are critical for safety. Be sure to use the specified parts to ensure safety when replacing them.

1. Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

[Resistors]

Item	Indication
Value	No indication ..... Ω K ..... k Ω M ..... M Ω
Tolerance	No indication ..... ±5% (All tolerances other than ± 5% are indicated in the schematic diagrams)
Power capacitance	No indication ..... 1/8W (1/16W for leadless resistors without indication) All capacitances other than the above are indicated in the schematic diagrams.

[Capacitors]

Item	Indication
Value	No indication ..... μF P ..... pF
Dielectric strength	No indication ..... 50V (All dielectric strengths other than 50V are indicated in the schematic diagrams.)

[Coils]

Item	Indication
Value	μ ..... μH m ..... mH

Cautions when using circuit board diagrams

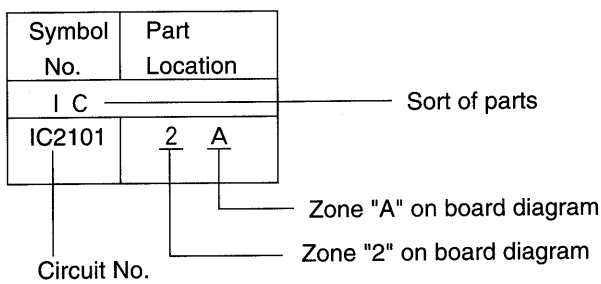
1. Identifications of sides A/B in circuit board diagrams

1) Board having a pattern on one side and parts on both sides.
   - Side A: Shows discrete parts, viewed from the pattern side.
   - Side B: Shows leadless parts, viewed from the pattern side.
2) Board having patterns on both sides and parts on both sides.
   - Side A: Shows parts and patterns which can be seen when the case is opened.
   - Side B: Shows parts and the pattern on the back of side A.

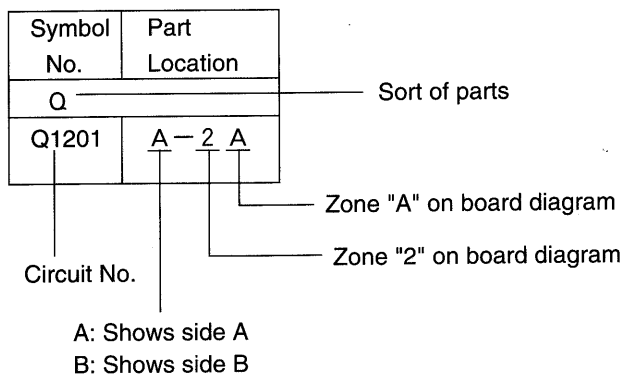
2. Table for indexing locations of parts

This table shows locations of each part on the circuit board diagrams. The locations are indicated using the guide scales on the external lines of diagrams.

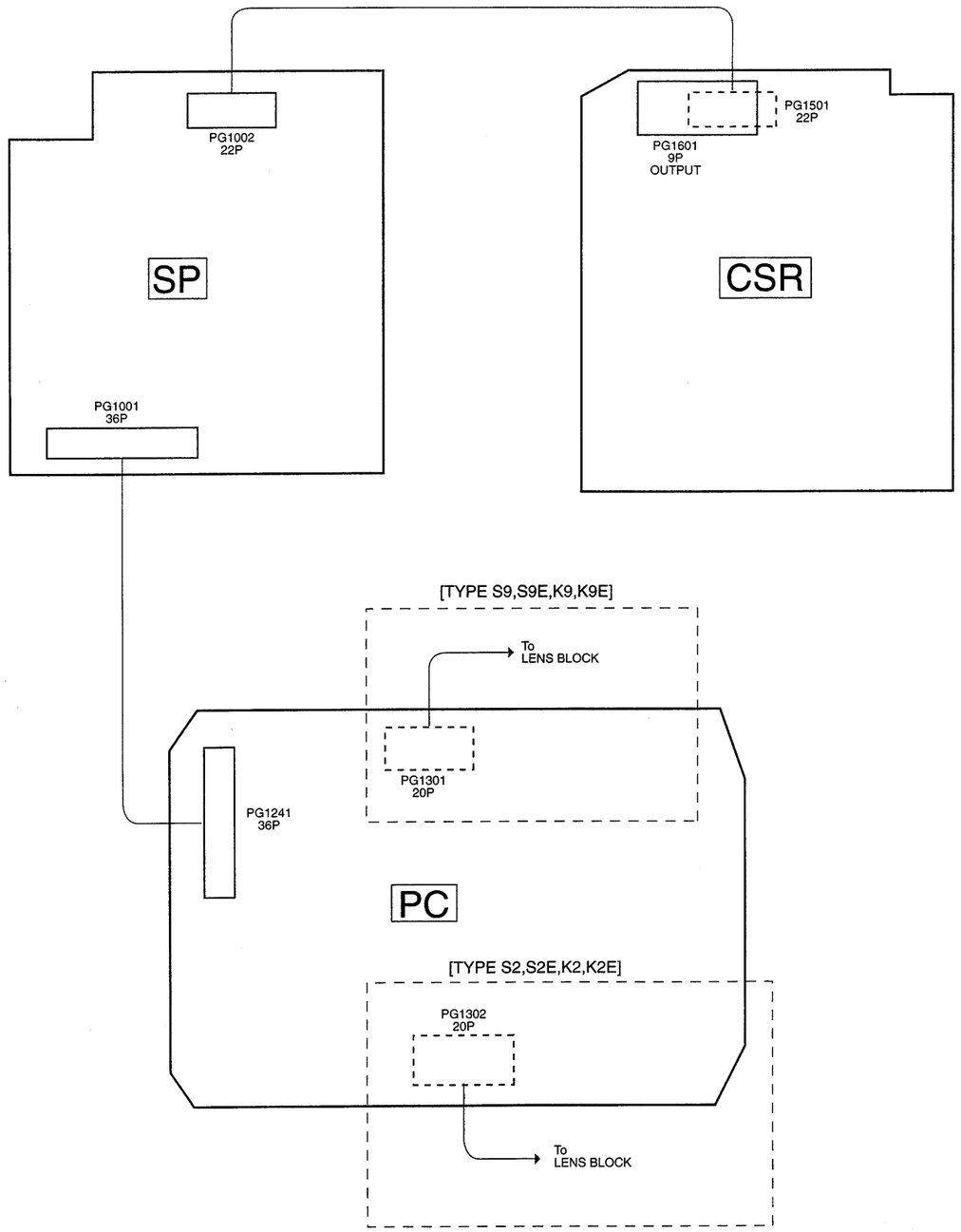
1) In case of one-layer board



2) In case of side A/B indication board



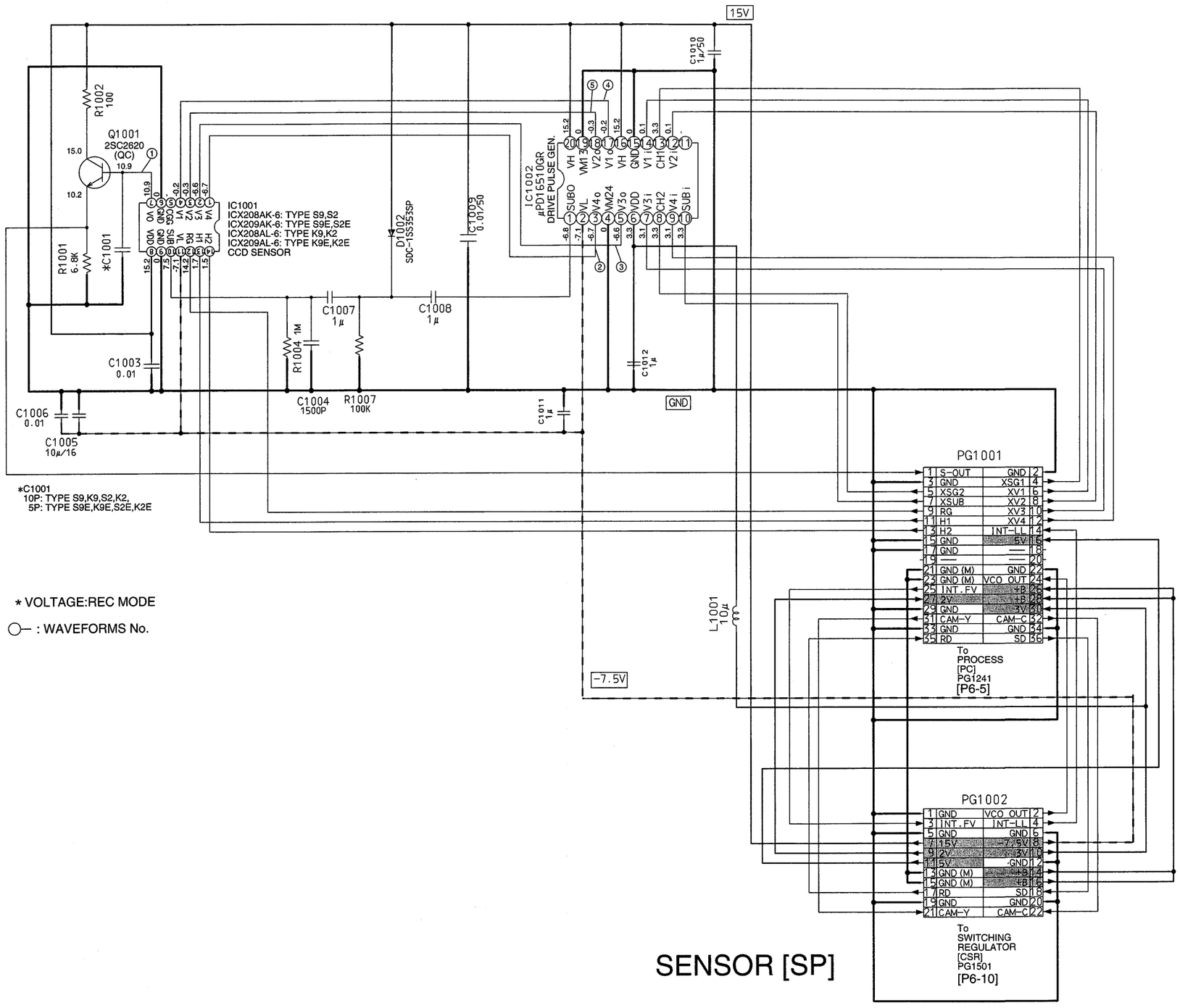
INTERNAL WIRING DIAGRAM



WAVEFORMS

1-A IC1001-7 1.1Vp-p 0.2V/20.0µsec.cm COLOR CHART	7-A IC1121-9 3.0Vp-p 1V/5.0msec.cm COLOR CHART	13-A IC1121-152 4.2Vp-p 1V/50.0nsec.cm COLOR CHART	19-A IC1121-161 3.1Vp-p 1V/5.0msec.cm COLOR CHART
2-A IC1002-3 7.3Vp-p 2V/20.0µsec.cm COLOR CHART	8-A IC1121-65 550mVp-p 0.2V/20.0µsec.cm COLOR CHART	14-A IC1121-155 3.1Vp-p 1V/20.0µsec.cm COLOR CHART	20-A IC1121-174 3.0Vp-p 1V/20.0µsec.cm COLOR CHART
3-A IC1002-5 7.3Vp-p 2V/20.0µsec.cm COLOR CHART	9-A IC1121-66 1.0Vp-p 0.2V/20.0µsec.cm COLOR CHART	15-A IC1121-156 3.1Vp-p 1V/20.0µsec.cm COLOR CHART	21-A IC1121-175 3.0Vp-p 1V/5.0msec.cm COLOR CHART
4-A IC1002-17 7.3Vp-p 2V/20.0µsec.cm COLOR CHART	10-A IC1121-147 7.0Vp-p 2V/100nsec.cm COLOR CHART	16-A IC1121-157 3.1Vp-p 1V/20.0µsec.cm COLOR CHART	
5-A IC1002-18 7.3Vp-p 2V/20.0µsec.cm COLOR CHART	11-A IC1121-148 7.0Vp-p 2V/100nsec.cm COLOR CHART	17-A IC1121-158 3.1Vp-p 1V/20.0µsec.cm COLOR CHART	
6-A IC1101-27 1.1Vp-p 0.2V/20.0µsec.cm COLOR CHART	12-A IC1121-151 4.2Vp-p 1V/50.0nsec.cm COLOR CHART	18-A IC1121-159 3.1Vp-p 1V/5.0msec.cm COLOR CHART	

SENSOR [SP] SCHEMATIC DIAGRAM



SENSOR [SP]

PROCESS [PC] SCHEMATIC DIAGRAM

PG1302 [TYPE S2,S2E,K2,K2E]
PG1301 [TYPE S9,S9E,K9,K9E]

ZOOM SENSE	6	20	
ZOOM VCC	7	19	
ZOOM LED	5	18	TL1335
FOCUS SENSE	15	17	TL1345
FOCUS VCC	16	16	
FOCUS LED	14	15	TL1344
FOCUS B+	18	14	TL1348
FOCUS B-	19	13	TL1349
FOCUS A-	20	12	TL1350
FOCUS A+	17	11	TL1347
HALL IN-	11	10	
HALL OUT+	10	9	
DRIVE+	8	8	
HALL IN+	9	7	
HALL OUT-	12	6	
DRIVE-	13	5	
ZOOM B+	2	4	TL1332
ZOOM B-	3	3	TL1333
ZOOM A+	1	2	TL1331
ZOOM A-	4	1	TL1334

TL1336
TL1346

To
LENS BLOCK

PG1241

1	S-OUT	GND	2
3	GND	XSG1	4
5	XSG2	XV1	6
7	XSUB	XV2	8
9	RG	XV3	10
11	H1	XV4	12
13	H2	INT-LL	14
15	GND	—	16
17	GND	—	18
19	—	—	20
21	GND (M)	GND	22
23	GND (M)	VCCOUT	24
25	INT.FV	—	26
27	—	—	28
29	GND	—	30
31	CAM-Y	CAM-C	32
33	GND	GND	34
35	RD	SD	36

To
SENSOR
[SP]
PG1001
[P6-4]

IC1101
HD49323AF
CDS/AGC & A/D CONV

IC1301
MPC17AT85VM
ZOOM MOTOR DRIVE

IC1302
MPC17AT85VM
FOCUS MOTOR DRIVE

*R1122
10 :TYPE S9,K,S2,K2
JUMPER :TYPE S9E,K9E,S2E,K2E

*C1126
22P : TYPE S9,K9,S2,K2
10P : TYPE S9E,K9E,S2E,K2E

CODE	PART NAME
AR	2SB1462
BR	2SC2412KBRST
CQ	2SC2411K-Q
E6	TC7SU04F
H9	UMH9N
LD	2SC2426
F7	KV1470
K	DA221
MO	MA132WA
MU	MA132WK
3.0L	MA3030

* VOLTAGE: REC MODE
◯— : WAVEFORMS No.

PG1241

1	S-OUT	GND	2
3	GND	XSG1	4
5	XSG2	XV1	6
7	XSUB	XV2	8
9	RG	XV3	10
11	H1	XV4	12
13	H2	INT-LL	14
15	GND	5V	16
17	GND	—	18
19	—	—	20
21	GND (M)	GND	22
23	GND (M)	VCCOUT	24
25	INT. FV	+B	26
27	2V	+B	28
29	GND	-5V	30
31	CAM-Y	CAM-C	32
33	GND	GND	34
35	RD	SD	36

To SENSOR [SP] PG1001 [P6-4]

IC1101 HD49323AF CDS/AGC & A/D CONV

IC1121 HG73C053FE CAMERA DSP

IC1122 MSM51V18165BSL-6TS-K D-RAM

IC1301 MPC17AT85VM ZOOM MOTOR DRIVE

IC1302 MPC17AT85VM FOCUS MOTOR DRIVE

*R1122
10 :TYPE S9,K,S2,K2
JUMPER :TYPE S9E,K9E,S2E,K2E

*C1126
22P : TYPE S9,K9,S2,K2
10P : TYPE S9E,K9E,S2E,K2E

*R1127
51K (1%): TYPE S9,K9,S2,K2,
47K (1%): TYPE S9E,K9E,S2E,K2E

*R1160
6.2K (1%): TYPE S9,K9,S2,K2
5.36K (1%): TYPE S9E,K9E,S2E,K2E

*X1172
28.6MHz: TYPE S9,K9,S2,K2
28.5MHz: TYPE S9E,K9E,S2E,K2E

[FOR TYPE S9,S9E,S2,S2E]

[FOR TYPE S9,K9,S2,K2]

RESET PULSE GEN. IC1203

(CAM C) (CAM Y)

(GND) (+B) (5V) (3V) (2V) (FV) (SD) (RD) (GND (M))

FOCUS VCC	16	15
FOCUS LED	14	15
FOCUS B+	18	14
FOCUS B−	19	13
FOCUS A−	20	12
FOCUS A+	17	11
HALL IN−	11	10
HALL OUT+	10	9
DRIVE+	8	8
HALL IN+	9	7
HALL OUT−	12	6
DRIVE−	13	5
ZOOM B+	2	4
ZOOM B−	3	3
ZOOM A+	1	2
ZOOM A−	4	1

TL1344, TL1348, TL1349, TL1350, TL1347, TL1332, TL1333, TL1331, TL1334

To LENS BLOCK

CODE	PART NAME
AR	2SB1462
BR	2SC2412KBRST
CQ	2SC2411K-Q
E6	TC7SU04F
H9	UMH9N
LD	2SC2426
F7	KV1470
K	DA221
MO	MA132WA
MU	MA132WK
3.0L	MA3030

★ VOLTAGE: REC MODE

◯— : WAVEFORMS No.

	TYPE							
	S9	S9E	K9	K9E	S2	S2E	K2	K2E
★R1358	330K				18K			
★R1359	220K				180K			
★R1361	330K				18K			
★R1362	220K				180K			
★R1371	330				270			

★R1122
10 :TYPE S9,K,S2,K2
JUMPER :TYPE S9E,K9E,S2E,K2E

★C1126
22P : TYPE S9,K9,S2,K2
10P : TYPE S9E,K9E,S2E,K2E

IC1301 MPC17AT85VM — ZOOM MOTOR DRIVE

IC1302 MPC17AT85VM — FOCUS MOTOR DRIVE

IC1351 UPC5023GS-147GJG — F.DET/IRIS DRIVE

IC1201 HD6432237MXXTE DIGITAL μP

1	2	3	4	5	6	7	8

PROCESS [PC]

*R1122
10 :TYPE S9,K,S2,K2
JUMPER :TYPE S9E,K9E,S2E,K2E

*C1126
22P : TYPE S9,K9,S2,K2
10P : TYPE S9E,K9E,S2E,K2E

*R1127
51K (1%): TYPE S9,K9,S2,K2,
47K (1%): TYPE S9E,K9E,S2E,K2E

*R1160
6.2K (1%): TYPE S9,K9,S2,K2
5.36K (1%): TYPE S9E,K9E,S2E,K2E

*X1172
28.6MHz: TYPE S9,K9,S2,K2
28.5MHz: TYPE S9E,K9E,S2E,K2E

[FOR TYPE S9,S9E,S2,S2E]
[FOR TYPE S9,K9,S2,K2]
[FOR TYPE S9,K9,S2,K2]
[FOR TYPE S9E,K9E,S2E,K2E]
[FOR TYPE S2,S2E,K2,K2E]
[FOR TYPE S9,S9E,K9,K9E]

IC1201
HD6432237MXXTE
DIGITAL µP

IC1301
MPC17AT85VM
ZOOM MOTOR DRIVE

IC1302
MPC17AT85VM
FOCUS MOTOR DRIVE

IC1351
UPC5023GS-147GJG
F.DET/IRIS DRIVE

IC1202
X25097V1-2.7
EEPROM

IC1203
RN5VT28AA
RESET PULSE GEN.

IC1173 (E6) INV.
IC1174 (E6) INV.

L.L.
INT

(CAM C)
(CAM Y)

IDENTIFICAT

SP [SENSOR]

Symbol No.	Parts Location
C	
C1001	B-1B
C1003	B-2B
C1004	B-3B
C1005	A-1B
C1006	B-2B
C1007	B-3B
C1008	B-3B
C1009	B-2A
C1010	B-2A
C1011	B-2A
C1012	B-2A
D	
D1002	B-3B
IC	

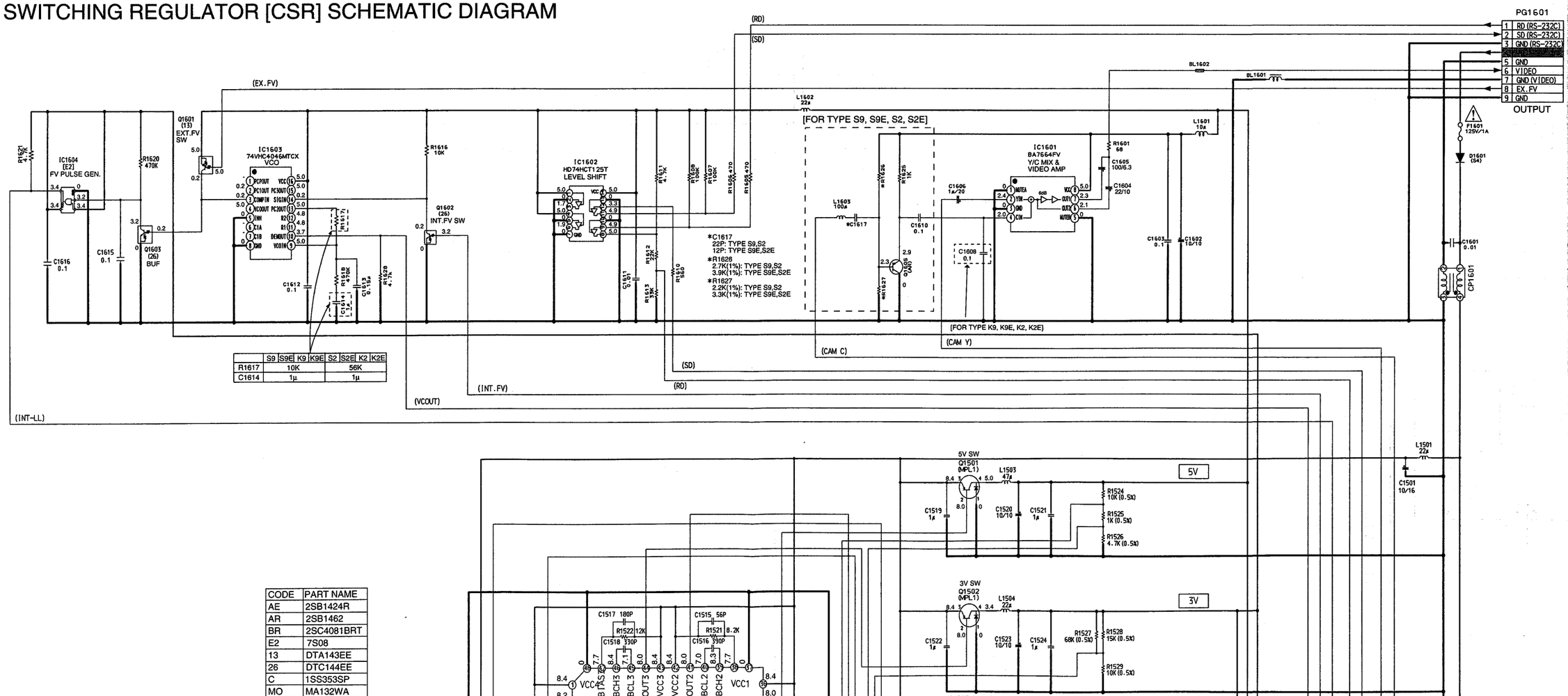
Symbol No.
IC1001
IC1002
L
L1001
PG
PG1001
PG1002
Q
Q1001
R
R1001
R1002
R1004
R1007

CSR [SWITCHING

Symbol No.	Parts Location
BL	
BL1601	B-3C
BL1602	A-3C
C	
C1501	A-3A
C1502	B-2A
C1503	B-3A
C1504	B-3A
C1505	B-3A
C1506	B-3A
C1507	B-3A
C1508	B-3A
C1510	B-3A
C1512	B-3B
C1513	B-2B
C1514	B-3B
C1515	B-2B
C1516	B-2A
C1517	B-2A
C1518	B-2A
C1519	B-2A
C1520	A-2A
C1521	B-2A
C1522	B-1A
C1523	A-1A
C1524	B-1A
C1525	B-1A
C1526	A-2A
C1527	B-1A
C1528	B-1B
C1529	B-1B
C1530	B-1B
C1531	B-2B
C1532	B-2B
C1601	A-3B
C1602	A-3C

Symbol No.
IC
IC1501
IC1601
IC1602
IC1603
IC1604
L
L1501
L1503
L1505
L1506
L1507
L1601
L1602
L1603
PG
PG1501
PG1601
Q
Q1501
Q1502
Q1503
Q1504
Q1506
Q1601
Q1602
Q1603
Q1605
R
R1501
R1505
R1509
R1510
R1512
R1515

SWITCHING REGULATOR [CSR] SCHEMATIC DIAGRAM



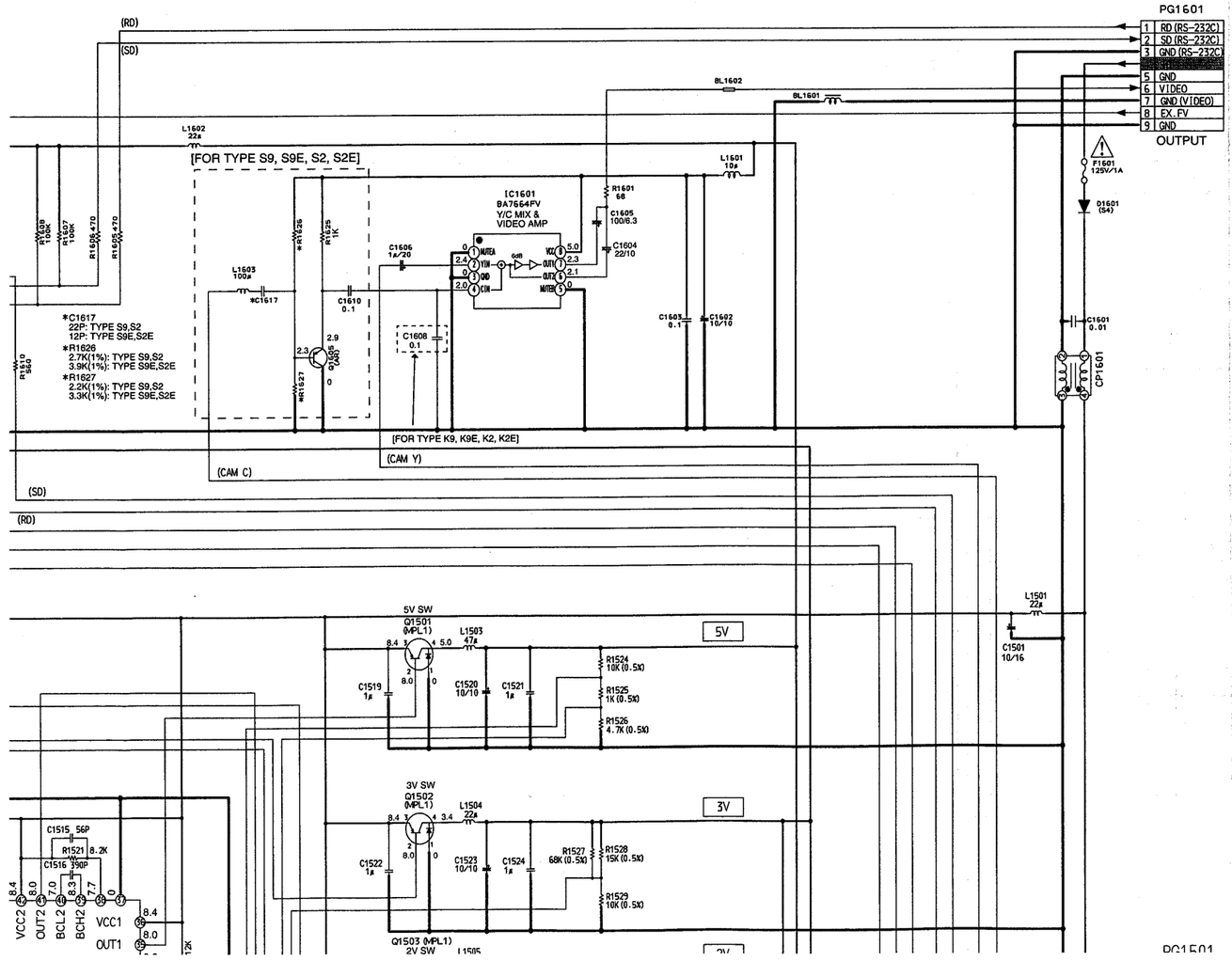
CODE	PART NAME
AE	2SB1424R
AR	2SB1462
BR	2SC4081BRT
E2	7S08
13	DTA143EE
26	DTC144EE
C	1SS353SP
MO	MA132WA
S4	D1FS4

IDENTIFICATION OF PARTS LOCATION

SP [SENSOR]

Symbol No.	Parts Location
C	
C1001	B-1B
C1003	B-2B
C1004	B-3B
C1005	A-1B
C1006	B-2B
C1007	B-3B
C1008	B-3B
C1009	B-2A
C1010	B-2A
C1011	B-2A
C1012	B-2A
D	
D1002	B-3B
IC	

Symbol No.	Parts Location
IC1001	B-2B
IC1002	B-2A
L	
L1001	B-1A
PG	
PG1001	B-1A
PG1002	B-3B
Q	
Q1001	B-1B
R	
R1001	B-1B
R1002	B-1B
R1004	B-3B
R1007	B-3B



CSR [SWITCHING REGULATOR]

Symbol No.	Parts Location
BL	
BL1601	B-3C
BL1602	A-3C
C	
C1501	A-3A
C1502	B-2A
C1503	B-3A
C1504	B-3A
C1505	B-3A
C1506	B-3A
C1507	B-3A
C1508	B-3A
C1510	B-3A
C1512	B-3B
C1513	B-2B
C1514	B-3B
C1515	B-2B
C1516	B-2A
C1517	B-2A
C1518	B-2A
C1519	B-2A
C1520	A-2A
C1521	B-2A
C1522	B-1A
C1523	A-1A
C1524	B-1A
C1525	B-1A
C1526	A-2A
C1527	B-1A
C1528	B-1B
C1529	B-1B
C1530	B-1B
C1531	B-2B
C1532	B-2B
C1601	A-3B
C1602	A-3C

Symbol No.	Parts Location
IC	
IC1501	B-3A
IC1601	A-2C
IC1602	B-1C
IC1603	B-1B
IC1604	A-1C
L	
L1501	A-3A
L1503	A-2A
L1504	A-1A
L1505	A-2A
L1506	B-2B
L1507	B-1B
L1601	A-3C
L1602	A-1B
L1603	A-3C
PG	
PG1501	A-3B
PG1601	B-3C
Q	
Q1501	B-2A
Q1502	B-1A
Q1503	B-1A
Q1504	B-1B
Q1506	B-2B
Q1601	B-1C
Q1602	B-1B
Q1603	A-1C
Q1605	A-3C
R	
R1501	B-2A
R1505	B-3A
R1509	B-3A
R1510	B-3A
R1512	B-3A
R1515	B-3B

Symbol No.	Parts Location
R1608	B-1C
R1610	B-2C
R1611	B-2C
R1612	B-1C
R1613	B-1C
R1617	B-1B
R1618	B-1B
R1620	A-1C
R1621	A-1C
R1625	A-3C
R1626	A-3C
R1627	A-3C
R1628	B-1B
T	
T1501	A-2B

PC [PROCESS]

Symbol No.	Parts Location
BL	
BL1121	A-2B
BL1122	A-2B
C	
C1101	B-1B
C1102	B-1A
C1103	B-1A
C1104	B-1A
C1105	B-1B
C1106	A-2A
C1107	B-1B
C1108	B-1B
C1109	B-1B
C1110	B-1B
C1111	B-1B
C1112	B-1A
C1113	B-1A
C1114	B-1A
C1121	A-2A
C1122	B-3B
C1123	B-3B
C1124	B-2A
C1126	A-2B
C1127	A-2B
C1128	A-2B
C1129	A-2B
C1130	B-2A
C1131	B-2A
C1132	B-1B
C1133	B-1B
C1134	B-2C
C1135	B-2C
C1136	B-2C
C1137	B-2C
C1138	B-2C
C1139	A-2C

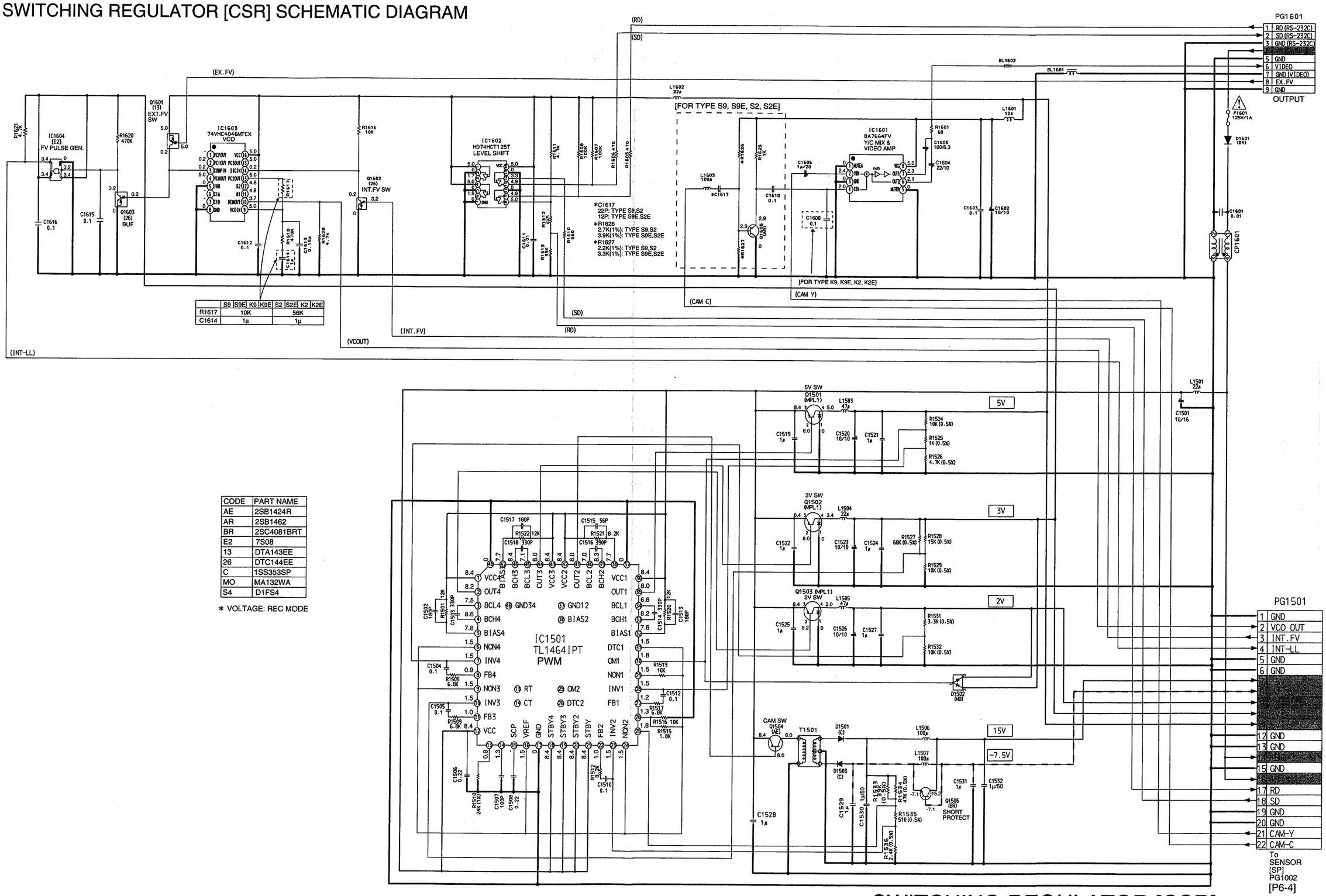
Symbol No.	Parts Location
C1208	B-5A
C1209	B-5A
C1212	A-3A
C1214	A-3A
C1215	A-3A
C1301	B-4B
C1302	B-4B
C1303	B-3C
C1304	B-3B
C1305	B-3B
C1306	B-5C
C1307	B-5C
C1308	B-4C
C1309	B-4C
C1310	B-4C
C1311	A-3C
C1312	B-4B
C1313	B-4C
C1317	B-4C
C1318	B-4C
C1319	B-5C
C1320	B-5C
C1351	A-5B
C1352	A-5B
C1353	A-4C
C1354	A-5C
C1355	A-5C
C1356	A-5B
C1357	A-5C
C1358	A-4C
C1359	A-4C
C1360	A-4C
C1361	A-4C
C1362	A-5C
CP	
CP1151	B-2C

Symbol No.	Parts Location
L1201	A-2A
L1202	A-3A
L1301	A-3C
L1302	A-3B
PG	
PG1241	A-1A
PG1302	B-3C
Q	
Q1151	B-1C
Q1152	B-1C
Q1153	B-2C
Q1201	B-5A
Q1351	A-5B
Q1352	A-5B
Q1353	A-5B
R	
R1101	B-1A
R1121	B-3A
R1122	A-2B
R1123	B-2A
R1124	B-2A
R1125	B-1B
R1126	B-2C
R1127	B-2C
R1128	A-1C
R1155	B-1C
R1156	B-1C
R1157	B-2C
R1158	B-1C
R1159	B-2C
R1160	B-2C
R1161	B-2C
R1162	B-2C
R1164	B-2C
R1165	B-2C
R1173	A-4A

Symbol No.	Parts Location
R1221	A-3A
R1222	A-3A
R1223	A-3A
R1224	A-3A
R1306	B-4B
R1307	B-4B
R1308	B-3C
R1309	B-3B
R1310	B-3B
R1311	B-3B
R1313	B-5C
R1314	B-5C
R1315	B-4C
R1316	B-4C
R1317	B-5B
R1318	B-5B
R1351	A-5B
R1352	A-5C
R1353	A-5C
R1354	A-5C
R1355	A-5C
R1356	A-5B
R1357	A-4C
R1358	A-4C
R1359	A-4C
R1360	A-4C
R1361	A-4C
R1362	A-4C
R1363	A-3C
R1364	A-4C
R1365	A-4C
R1366	A-4C
R1367	A-4C
R1368	A-4C
R1370	A-4C
R1371	A-4C

Symbol No.	Parts Location
X	
X1172	A-4A
ZD	
ZD1171	A-4A

SWITCHING REGULATOR [CSR] SCHEMATIC DIAGRAM



CODE	PART NAME
AE	2SB1424R
AR	2SB1462
BR	2SC4081BRT
E2	7S08
13	DTA143EE
26	DTC144EE
C	1SS353SP
MO	MA132WA
S4	D1FS4

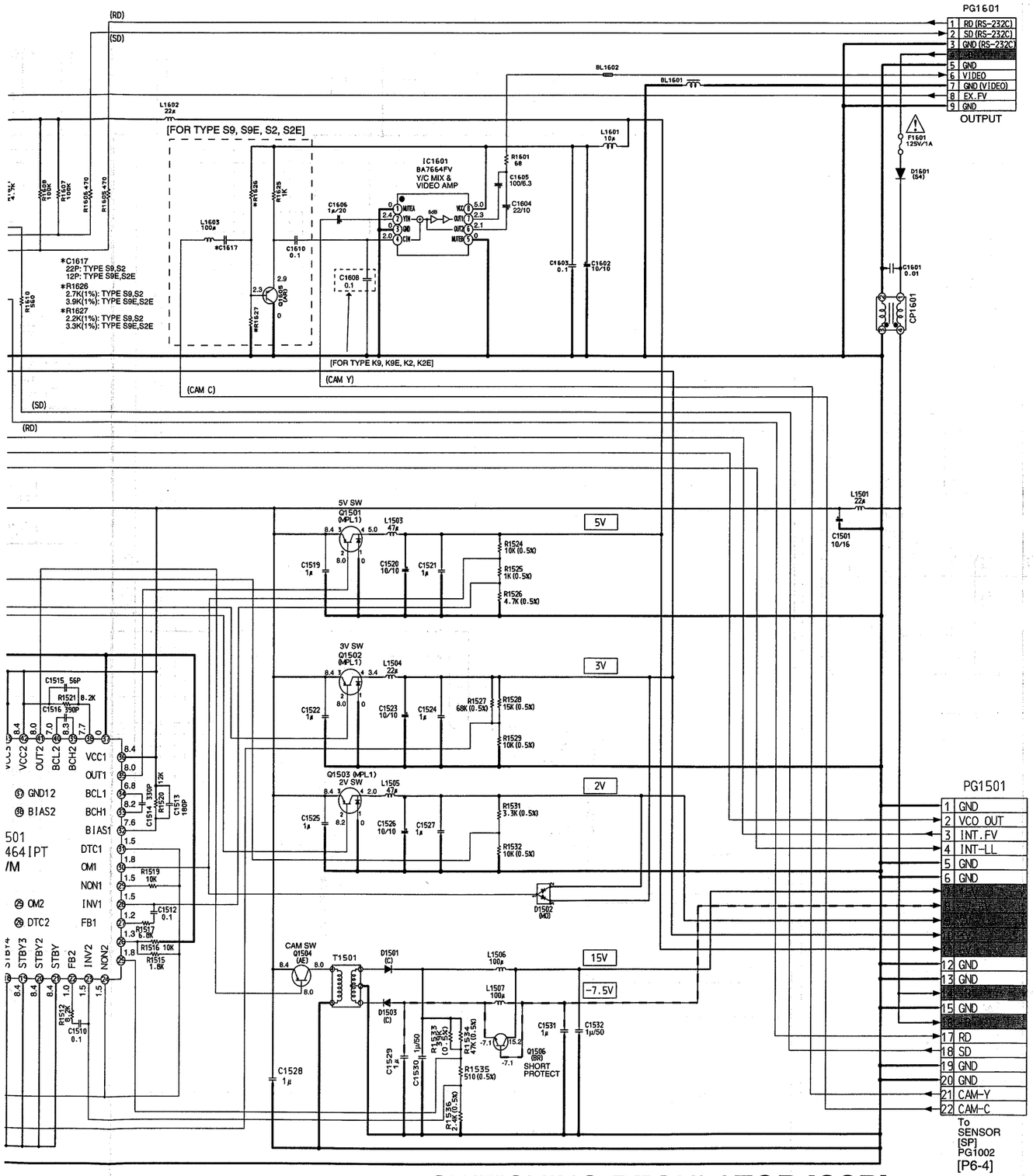
* VOLTAGE: REC MODE

CSR [SWITCHIN

Symbol No.	Parts Location
BL	
BL1601	B-3C
BL1602	A-3C
C	
C1501	A-3A
C1502	B-2A
C1503	B-3A
C1504	B-3A
C1505	B-3A
C1506	B-3A
C1507	B-3A
C1508	B-3A
C1510	B-3A
C1512	B-3B
C1513	B-2B
C1514	B-3B
C1515	B-2B
C1516	B-2A
C1517	B-2A
C1518	B-2A
C1519	B-2A
C1520	A-2A
C1521	B-2A
C1522	B-1A
C1523	A-1A
C1524	B-1A
C1525	B-1A
C1526	A-2A
C1527	B-1A
C1528	B-1B
C1529	B-1B
C1530	B-1B
C1531	B-2B
C1532	B-2B
C1601	A-3B
C1602	A-3C
C1603	A-2C
C1604	A-3C
C1605	A-2B
C1606	A-2C
C1608	A-3C
C1610	A-3C
C1611	B-1C
C1612	B-1C
C1613	B-1B
C1614	B-1B
C1615	A-1C
C1616	A-1C
C1617	A-3C
CP	
CP1601	A-3A
D	
D1501	A-2B
D1502	B-1A
D1503	A-2B
D1601	B-3C
F	
F1601	B-3C

Symb No.
IC
IC150
IC160
IC160
IC160
IC160
L
L1501
L1502
L1504
L1505
L1506
L1507
L1601
L1602
L1603
PG
PG15
PG16
Q
Q150
Q150
Q150
Q150
Q160
Q160
Q160
Q160
R
R1501
R1505
R1509
R1510
R1511
R1512
R1513
R1515
R1516
R1517
R1518
R1519
R1520
R1521
R1522
R1524
R1525
R1526
R1527
R1528
R1529
R1531
R1532
R1533
R1534
R1535
R1536
R1601
R1605
R1606
R1607

SWITCHING REGULATOR [CSR]



SWITCHING REGULATOR [CSR]

CSR [SWITCHING REGULATOR]

Symbol No.	Parts Location
BL	
BL1601	B-3C
BL1602	A-3C
C	
C1501	A-3A
C1502	B-2A
C1503	B-3A
C1504	B-3A
C1505	B-3A
C1506	B-3A
C1507	B-3A
C1508	B-3A
C1510	B-3A
C1512	B-3B
C1513	B-2B
C1514	B-3B
C1515	B-2B
C1516	B-2A
C1517	B-2A
C1518	B-2A
C1519	B-2A
C1520	A-2A
C1521	B-2A
C1522	B-1A
C1523	A-1A
C1524	B-1A
C1525	B-1A
C1526	A-2A
C1527	B-1A
C1528	B-1B
C1529	B-1B
C1530	B-1B
C1531	B-2B
C1532	B-2B
C1601	A-3B
C1602	A-3C
C1603	A-2C
C1604	A-3C
C1605	A-2B
C1606	A-2C
C1608	A-3C
C1610	A-3C
C1611	B-1C
C1612	B-1C
C1613	B-1B
C1614	B-1B
C1615	A-1C
C1616	A-1C
C1617	A-3C
CP	
CP1601	A-3A
D	
D1501	A-2B
D1502	B-1A
D1503	A-2B
D1601	B-3C
F	
F1601	B-3C

Symbol No.	Parts Location
IC	
IC1501	B-3A
IC1601	A-2C
IC1602	B-1C
IC1603	B-1B
IC1604	A-1C
L	
L1501	A-3A
L1503	A-2A
L1504	A-1A
L1505	A-2A
L1506	B-2B
L1507	B-1B
L1601	A-3C
L1602	A-1B
L1603	A-3C
PG	
PG1501	A-3B
PG1601	B-3C
Q	
Q1501	B-2A
Q1502	B-1A
Q1503	B-1A
Q1504	B-1B
Q1506	B-2B
Q1601	B-1C
Q1602	B-1B
Q1603	A-1C
Q1605	A-3C
R	
R1501	B-2A
R1505	B-3A
R1509	B-3A
R1510	B-3A
R1512	B-3A
R1515	B-3B
R1516	B-3B
R1517	B-3B
R1519	B-3B
R1520	B-2B
R1521	B-2B
R1522	B-2A
R1524	B-2A
R1525	B-2A
R1526	B-2A
R1527	B-1A
R1528	B-1A
R1529	B-1A
R1531	B-1A
R1532	B-1A
R1533	A-2B
R1534	A-2B
R1535	A-2B
R1536	A-2B
R1601	A-3B
R1605	B-2C
R1606	B-2C
R1607	B-2C

Symbol No.	Parts Location
R1608	B-1C
R1610	B-2C
R1611	B-2C
R1612	B-1C
R1613	B-1C
R1617	B-1B
R1618	B-1B
R1620	A-1C
R1621	A-1C
R1625	A-3C
R1626	A-3C
R1627	A-3C
R1628	B-1B
T	
T1501	A-2B

PC [PROCESS]

Symbol No.	Parts Location
BL	
BL1121	A-2B
BL1122	A-2B
C	
C1101	B-1B
C1102	B-1A
C1103	B-1A
C1104	B-1A
C1105	B-1B
C1106	A-2A
C1107	B-1B
C1108	B-1B
C1109	B-1B
C1110	B-1B
C1111	B-1B
C1112	B-1A
C1113	B-1A
C1114	B-1A
C1121	A-2A
C1122	B-3B
C1123	B-3B
C1124	B-2A
C1126	A-2B
C1127	A-2B
C1128	A-2B
C1129	A-2B
C1130	B-2A
C1131	B-2A
C1132	B-1B
C1133	B-1B
C1134	B-2C
C1135	B-2C
C1136	B-2C
C1137	B-2C
C1138	B-2C
C1139	A-2C
C1140	A-2C
C1141	A-2B
C1143	A-2A
C1160	B-1C
C1176	A-4A
C1177	A-4A
C1178	A-4A
C1180	A-5A
C1182	A-5B
C1183	A-4A
C1184	A-4A
C1185	A-4A
C1187	A-4B
C1191	A-5B
C1192	A-4B
C1201	A-2A
C1202	B-4A
C1203	B-4B
C1204	B-4B
C1205	B-4B
C1206	B-4B
C1207	B-5B

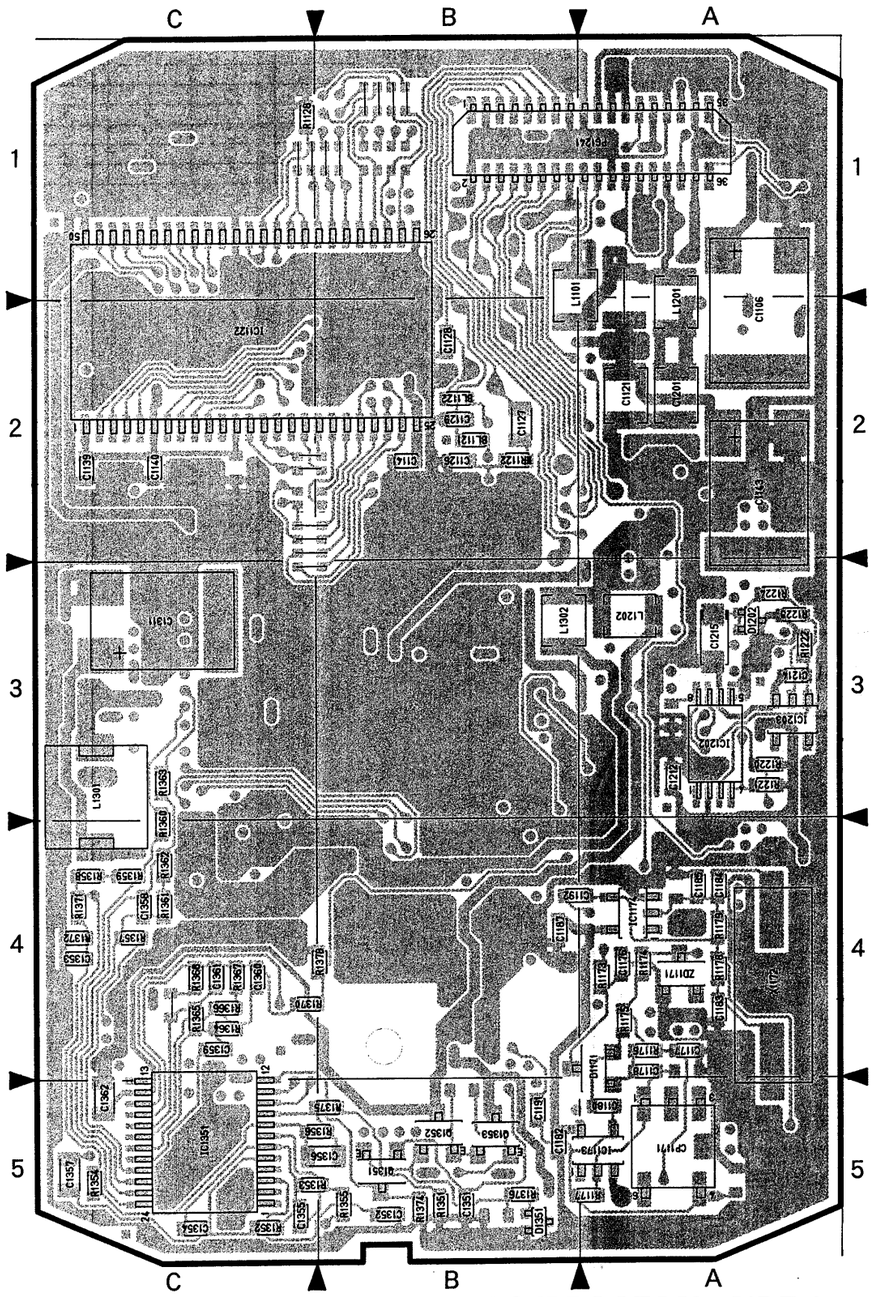
Symbol No.	Parts Location
C1208	B-5A
C1209	B-5A
C1212	A-3A
C1214	A-3A
C1215	A-3A
C1301	B-4B
C1302	B-4B
C1303	B-3C
C1304	B-3B
C1305	B-3B
C1306	B-5C
C1307	B-5C
C1308	B-4C
C1309	B-4C
C1310	B-4C
C1311	A-3C
C1312	B-4B
C1313	B-4C
C1317	B-4C
C1318	B-4C
C1319	B-5C
C1320	B-5C
C1351	A-5B
C1352	A-5B
C1353	A-4C
C1354	A-5C
C1355	A-5C
C1356	A-5B
C1357	A-5C
C1358	A-4C
C1359	A-4C
C1360	A-4C
C1361	A-4C
C1362	A-5C
CP	
CP1151	B-2C
CP1171	A-5A
D	
D1151	B-2C
D1171	A-4A
D1201	B-5B
D1202	A-3A
D1351	A-5B
IC	
IC1101	B-1A
IC1121	B-2B
IC1122	A-2C
IC1173	A-5A
IC1174	A-4A
IC1201	B-4A
IC1202	A-3A
IC1203	A-3A
IC1301	B-4B
IC1302	B-5C
IC1351	A-5C
L	
L1101	A-2A
L1102	B-1A

Symbol No.	Parts Location
L1201	A-2A
L1202	A-3A
L1301	A-3C
L1302	A-3B
PG	
PG1241	A-1A
PG1302	B-3C
Q	
Q1151	B-1C
Q1152	B-1C
Q1153	B-2C
Q1201	B-5A
Q1351	A-5B
Q1352	A-5B
Q1353	A-5B
R	
R1101	B-1A
R1121	B-3A
R1122	A-2B
R1123	B-2A
R1124	B-2A
R1125	B-1B
R1126	B-2C
R1127	B-2C
R1128	A-1C
R1155	B-1C
R1156	B-1C
R1157	B-2C
R1158	B-1C
R1159	B-2C
R1160	B-2C
R1161	B-2C
R1162	B-2C
R1164	B-2C
R1165	B-2C
R1173	A-4A
R1174	A-4A
R1175	A-4A
R1176	A-4A
R1177	A-5A
R1178	A-4A
R1179	A-4A
R1201	B-4A
R1202	B-5A
R1203	B-5A
R1204	B-5A
R1205	B-5B
R1206	B-5B
R1207	B-5B
R1208	B-5B
R1209	B-5A
R1214	B-5A
R1215	B-5A
R1216	B-5A
R1217	B-5A
R1218	B-3A
R1219	B-3A
R1220	A-3A

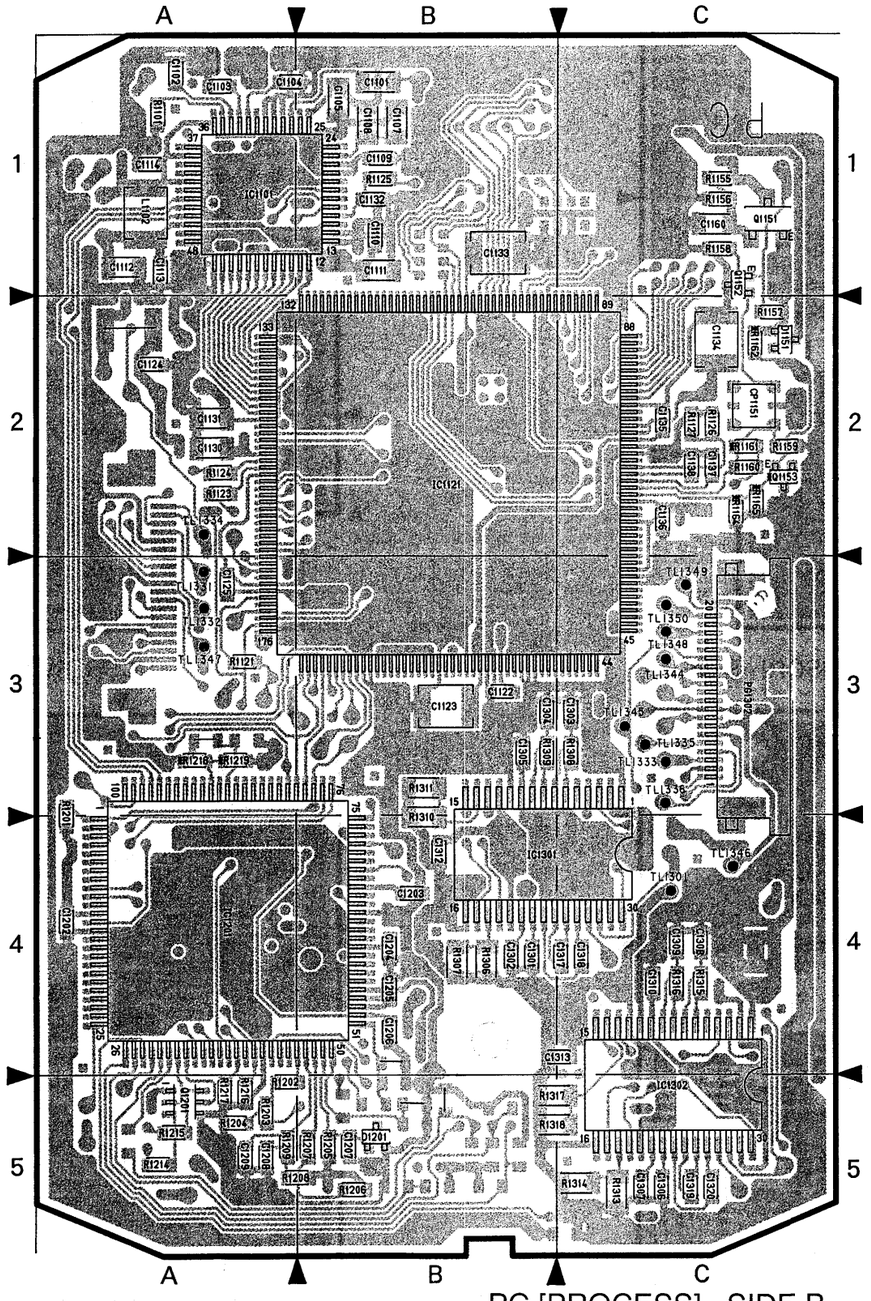
Symbol No.	Parts Location
R1221	A-3A
R1222	A-3A
R1223	A-3A
R1224	A-3A
R1306	B-4B
R1307	B-4B
R1308	B-3C
R1309	B-3B
R1310	B-3B
R1311	B-3B
R1313	B-5C
R1314	B-5C
R1315	B-4C
R1316	B-4C
R1317	B-5B
R1318	B-5B
R1351	A-5B
R1352	A-5C
R1353	A-5C
R1354	A-5C
R1355	A-5C
R1356	A-5B
R1357	A-4C
R1358	A-4C
R1359	A-4C
R1360	A-4C
R1361	A-4C
R1362	A-4C
R1363	A-3C
R1364	A-4C
R1365	A-4C
R1366	A-4C
R1367	A-4C
R1368	A-4C
R1370	A-4C
R1371	A-4C
R1372	A-4C
R1374	A-5B
R1375	A-5B
R1376	A-5B
R1378	A-4C
RM	
RM1128	B-1C
TL	
TL1301	B-4C
TL1331	B-3A
TL1332	B-3A
TL1333	B-3C
TL1334	B-2A
TL1335	B-3C
TL1336	B-3C
TL1344	B-3C
TL1345	B-3C
TL1346	B-4C
TL1347	B-3A
TL1348	B-3C
TL1349	B-3C
TL1350	B-3C

Symbol No.	Parts Location
X	
X1172	A-4A
ZD	
ZD1171	A-4A

PC [PROCESS] CIRCUIT BOARD



PC [PROCESS] –SIDE A–



PC [PROCESS] –SIDE B–
[PATTERN No. JA1696-2]

DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (*) in the circuit board diagrams.

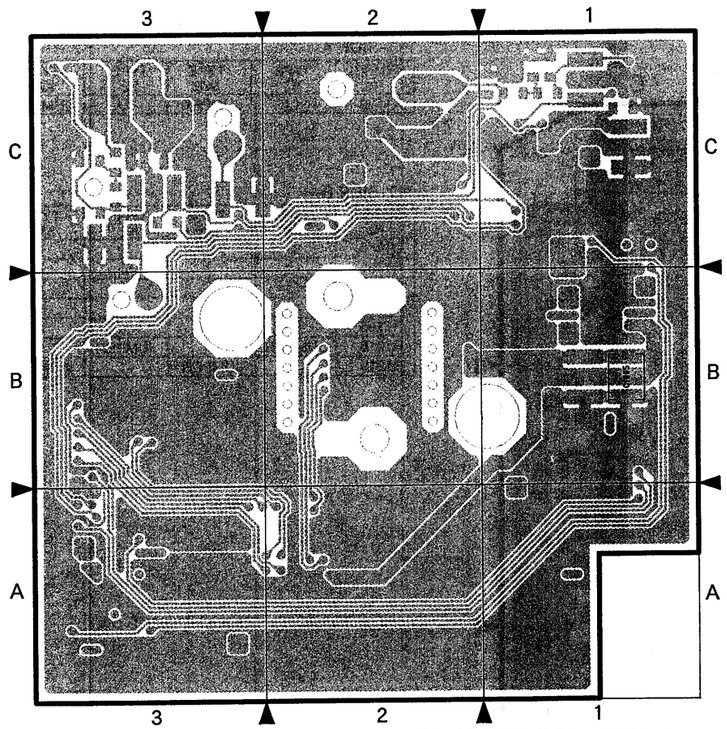
PC -SIDE A-

SYMBOL No.	TYPE S2	TYPE S2E	TYPE K2	TYPE K2E
R1122	○	JUMPER	○	JUMPER

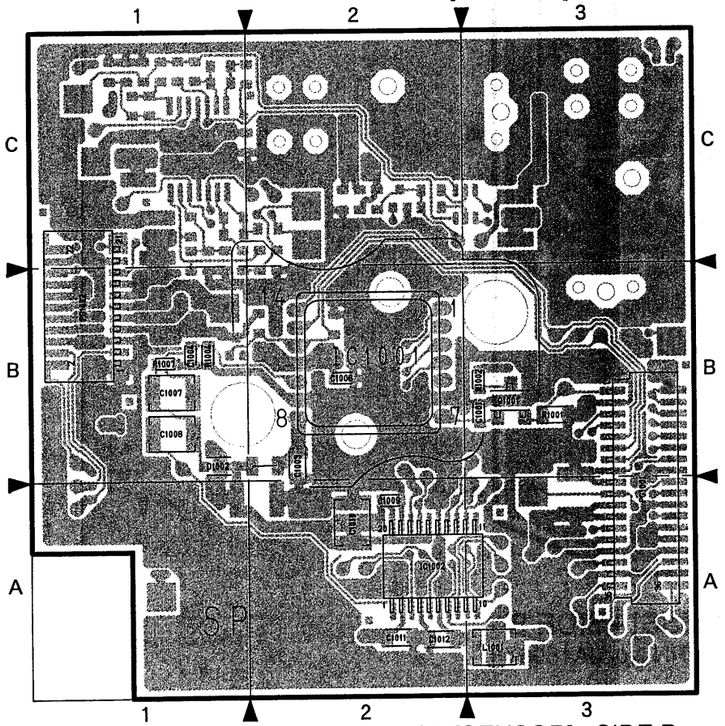
PC -SIDE B-

SYMBOL No.	TYPE S2	TYPE S2E	TYPE K2	TYPE K2E
Q1153	○	○	×	×
R1161	○	×	○	×
R1162	○	○	×	×
R1164	○	○	×	×
R1165	○	○	×	×
R1218	JUMPER	×	JUMPER	×
R1219	×	JUMPER	×	JUMPER

SP [SENSOR] CIRCUIT BOARD

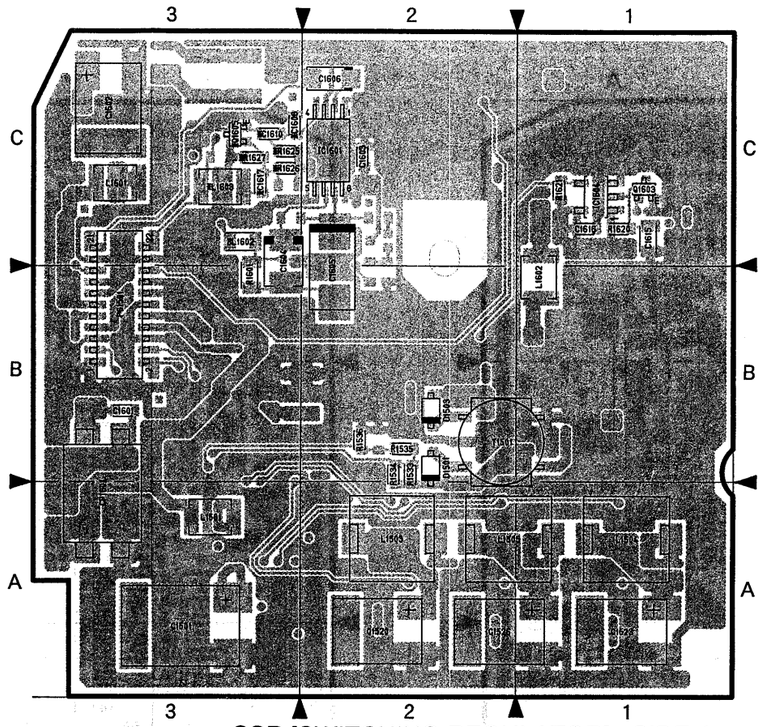


SP [SENSOR] –SIDE A–

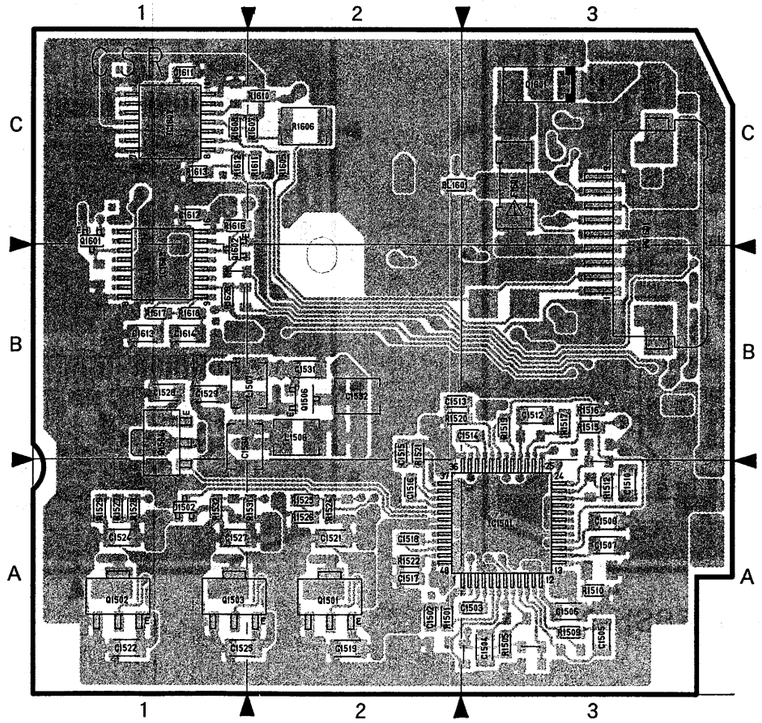


SP [SENSOR] –SIDE B–
[PATTERN No. JA1696-2]

CSR [SWITCHING REGULATOR] CIRCUIT BOARD



CSR [SWITCHING REGULATOR] –SIDE A–



CSR [SWITCHING REGULATOR] –SIDE B–
[PATTERN No. JA1696-2]

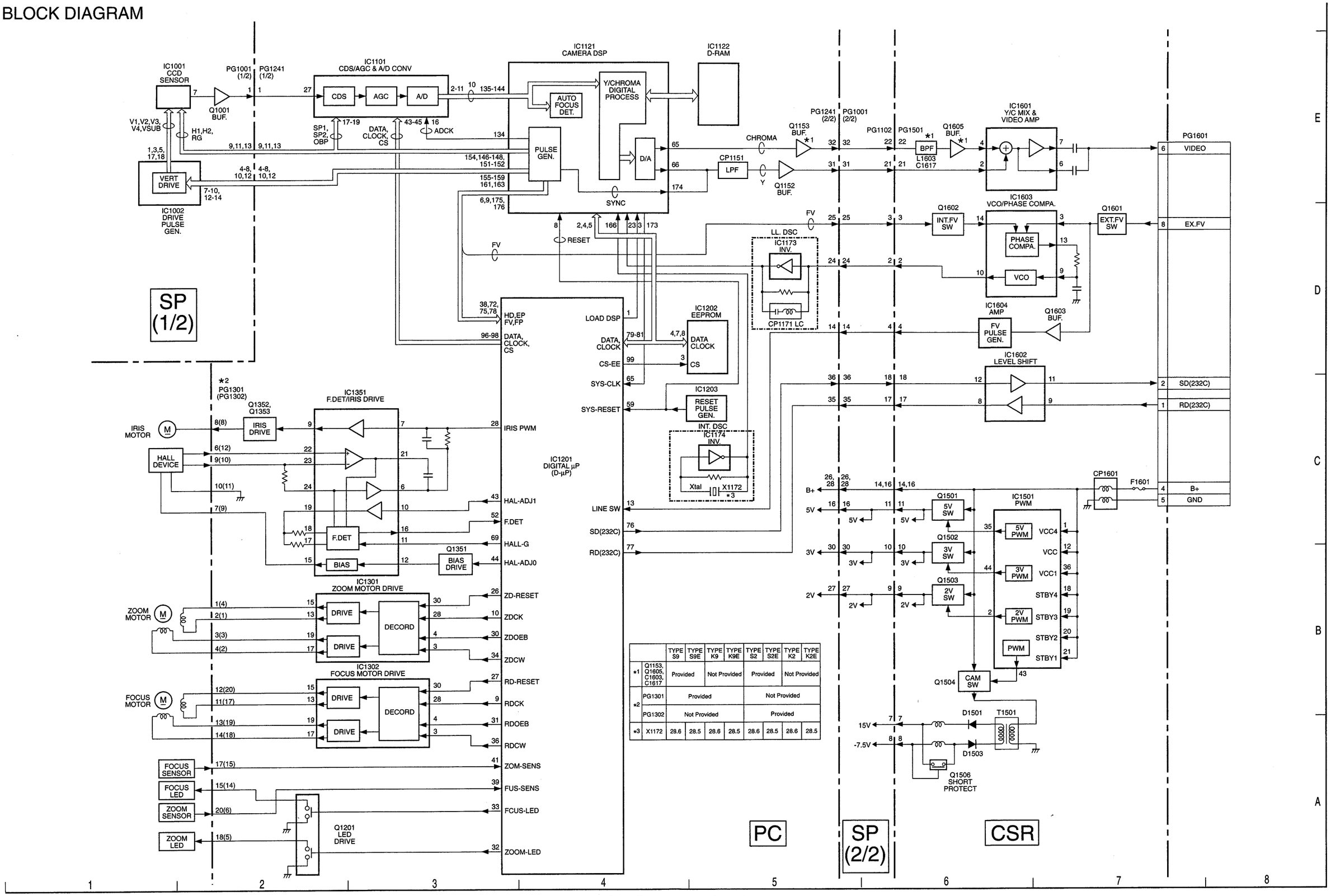
DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (∗) in the circuit board diagrams.

CSR -SIDE A-

SYMBOL No.	TYPE S2	TYPE S2E	TYPE K2	TYPE K2E
C1608	×	×	○	○
C1610	○	○	×	×
C1617	○	○	×	×
L1603	○	○	×	×
Q1605	○	○	×	×
R1625	○	○	×	×
R1626	○	○	×	×
R1627	○	○	×	×

BLOCK DIAGRAM



		TYPE S9	TYPE S9E	TYPE K9	TYPE K9E	TYPE S2	TYPE S2E	TYPE K2	TYPE K2E
*1	Q1153, Q1605, C1603, C1617	Provided		Not Provided		Provided		Not Provided	
*2	PG1301	Provided				Not Provided			
	PG1302	Not Provided				Provided			
*3	X1172	28.6	28.5	28.6	28.5	28.6	28.5	28.6	28.5

MICROPROCESSOR PIN FUNCTION TABLES

1. Digital Microprocessor (IC1201: D-μP)

Pin No.	I/O	Active Level	Abbreviation	Function
1	O	(Pulse)	LD-DSP	Activates data communication with IC1121 (DSP).
2	O	(Pulse)	CS-DAC	Not used. Open.
3	O	(Pulse)	CS-VAP	
4	O	Hi	GYRO-RST	
5	-----	-----	CEON	
6	-----	-----	CHARGE	
7	I	Hi/Lo	LCD-OPEN	
8	I	Hi/Lo	LCD-REV	
9	O	(Pulse)	RD-CK	Outputs focus motor drive signal to IC1302 (FOCUS MOTOR DRIVE).
10	O	(Pulse)	ZD-CK	Outputs zoom motor drive signal to IC1301 (ZOOM MOTOR DRIVE).
11	-----	-----	PAL60-ON	Not used. Open.
12	-----	-----	VCC	3V power input.
13	I	Hi/Lo	LINE SW	External sync detection input. When "Hi" is input, the unit will be driven in the external sync mode; when "Lo" is input, it will be driven in the internal sync mode.
14	-----	-----	GND	Ground.
15	I	Lo	CLOSS-U	Not used. Open.
16	I	Lo	CLOSS-D	
17	I	Lo	CLOSS-L	
18	I	Lo	CLOSS-R	
19	I	Lo	ENTER	
20	-----	-----	----------	
21	-----	-----	----------	
22	I	0V-3V	H-VAP	
23	-----	-----	XTAL-CTL	
24	I	0V-3V	V-VAP	
25	-----	-----	CHECK8	
26	O	Hi	ZD-RESET	Resets IC1301 (ZOOM MOTOR DRIVE).
27	O	Hi	RD-RESET	Resets IC1302 (FOCUS MOTOR DRIVE).
28	O	(Pulse)	IRIS PWM	Iris motor drive output .
29	-----	-----	LD JIG	Not used. Open.
30	O	(Pulse)	ZDOEB	Activates zoom drive data communications with IC1301 (ZOOM MOTOR DRIVE).
31	O	(Pulse)	FOOEB	Activates focus drive data communications with IC1301 (FOCUS MOTOR DRIVE).
32	O	(Pulse)	ZOOM-LED	Output pulses to drive the ZOOM LED in the lens block via Q1201 (LED DRIVE).
33	O	(Pulse)	FCUS-LED	Output pulses to drive the FOCUS LED in the lens block via Q1201 (LED DRIVE).
34	O	Hi/Lo	ZD CW	Issues a command which determines with IC1301 (ZOOM MOTOR DRIVE).
35	O	PWM	ZD-PWMA	Not used. Open.
36	O	Hi/Lo	RD CW	Issues a command which determines with IC1302 (FOCUS MOTOR DRIVE).
37	O	PWM	RD-PWMA	Not used. Open.
38	I	(Pulse)	FV	Receives the vertical sync pulses that detect the iris detection area, from IC1121 (DSP).
39	I	(Pulse)	ZOM-SENS	Zoom motor position detection input.
40	I	(Pulse)	REM-IR	Not used. Open.
41	I	(Pulse)	FUS-SENS	Focus motor position detection input.
42	-----	-----	GND	Ground.
43	O	0V-5V	HAL-ADJ.1	Controls the offset voltage of IC1351 (F.DET/IRIS DRIVE).
44	O	0V-5V	HAL-ADJ0	Drives bias generator in IC1351 (F.DET/IRIS DRIVE) via Q1351 (BUF) to control the bias voltage of the Hall devices.
45	-----	-----	BATTRY	Not used. Open.
46	I	0V-5V	ZOOM-SW	Not used.
47	I	0V-3V	KEY2	
48	I	0V-3V	KEY1	
49	I	0V-3V	TEMP-ADJ	Temperature change detection input. Detects variations in the forward voltage at the connected diode to correct the back-focus.

Pin No.	I/O	Active Level	Abbreviation	Function
50	I	0V-3V	V-GYRO	Not used. Connect to ground.
51	I	0V-3V	H-GYRO	
52	I	0V-3V	FDET	F-value detection input. Receives the F.DET voltage detected by IC1351 (F.DET/ IRIS DRIVE) and compares this with the reference voltage input via pin 53 to detect the F-value.
53	-----	-----	AVCC	Reference 3V power input.
54	-----	-----	AVCC	A/D reference voltage input (connected to 3V power supply).
55	-----	-----	VCC	3V power input.
56	-----	-----	VCC	
57	-----	-----	----------	Not used. Open.
58	-----	-----	----------	
59	I	Lo	SYS-REST	Reset signal input from IC1203 (RESET PULSE GEN.).
60	-----	-----	VCC	3V power input.
61	-----	-----	STBY	Not used. Connect to 3V power supply.
62	-----	-----	VCC	3V power input.
63	-----	-----	----------	Not used. Open.
64	-----	-----	GND	Grounded.
65	I	(Pulse)	SYS-CLOCK	Inputs control clock pulses from IC1121 (DSP).
66	-----	-----	----------	Not used. Open.
67	-----	-----	VCC	3V power input.
68	-----	-----	----------	Not used. Open.
69	O	Hi	HALL-G	Controls the amplification (gain of Hall device) of IC1351 (F.DET/IRIS DRIVE).
70	-----	-----	----------	Not used. Open.
71	-----	-----	----------	
72	I	(Pulse)	HD	Horizontal sync input.
73	-----	-----	SHUT-CTL	Not used. Open.
74	-----	-----	STROBE	
75	I	(Pulse)	FP	Field discrimination pulse input.
76	O	(Pulse)	SD (232C)	Used for initial settings and adjustment. For data communications with personal computer.
77	I	(Pulse)	RD (232C)	
78	I	(Pulse)	EP3/AFLH	Receives pulses which discriminate the iris detection area.
79	O	(Pulse)	SDO	For data communications with IC1121 (DSP) and IC1202 (EEP-ROM).
80	I	(Pulse)	SDI	
81	O	(Pulse)	SCLK	
82	-----	-----	----------	Not used. Open.
83	-----	-----	----------	
84	-----	-----	----------	
85	-----	-----	----------	
86	-----	-----	DC LIGHT SW OFF	
87	-----	-----	----------	
88	I	Hi/Lo	16/ 22	Lens selection input: "Hi" is input with X16 lens; "Lo" is input with X22 lens.
89	-----	-----	LIGHT-SW	Not used. Open.
90	I	Hi/Lo	PAL/NTSC	Broadcast system select input: "HI" is input with PAL programs; "Lo" is input with NTSC programs.
91	-----	-----	----------	Not used. Open.
92	I	0V-5V	F-DIAL1	
93	I	0V-5V	F-DIAL2	
94	-----	-----	LIGHT-ON	
95	-----	-----	SCRN-ON	
96	O	(Pulse)	CLK-CDS	Transfer data to IC1101 (CDS/AGC & A/D CONV.).
97	O	(Pulse)	SDO-CDS	
98	O	(Pulse)	CS-CDS	Activates data communications with IC1101 (CDS/AGC & A/D CONV.).
99	O	(Pulse)	CS-EE	Activates data communications with IC1105 (EEP-ROM).
100	O	(Pulse)	CS-SYS	Not used. Open.

HITACHI

VK-S234/S234E TK No.8907E Digital Media Products Division,Tokai
VK-K234/K234E

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Printed in Japan (II)